Scientific American

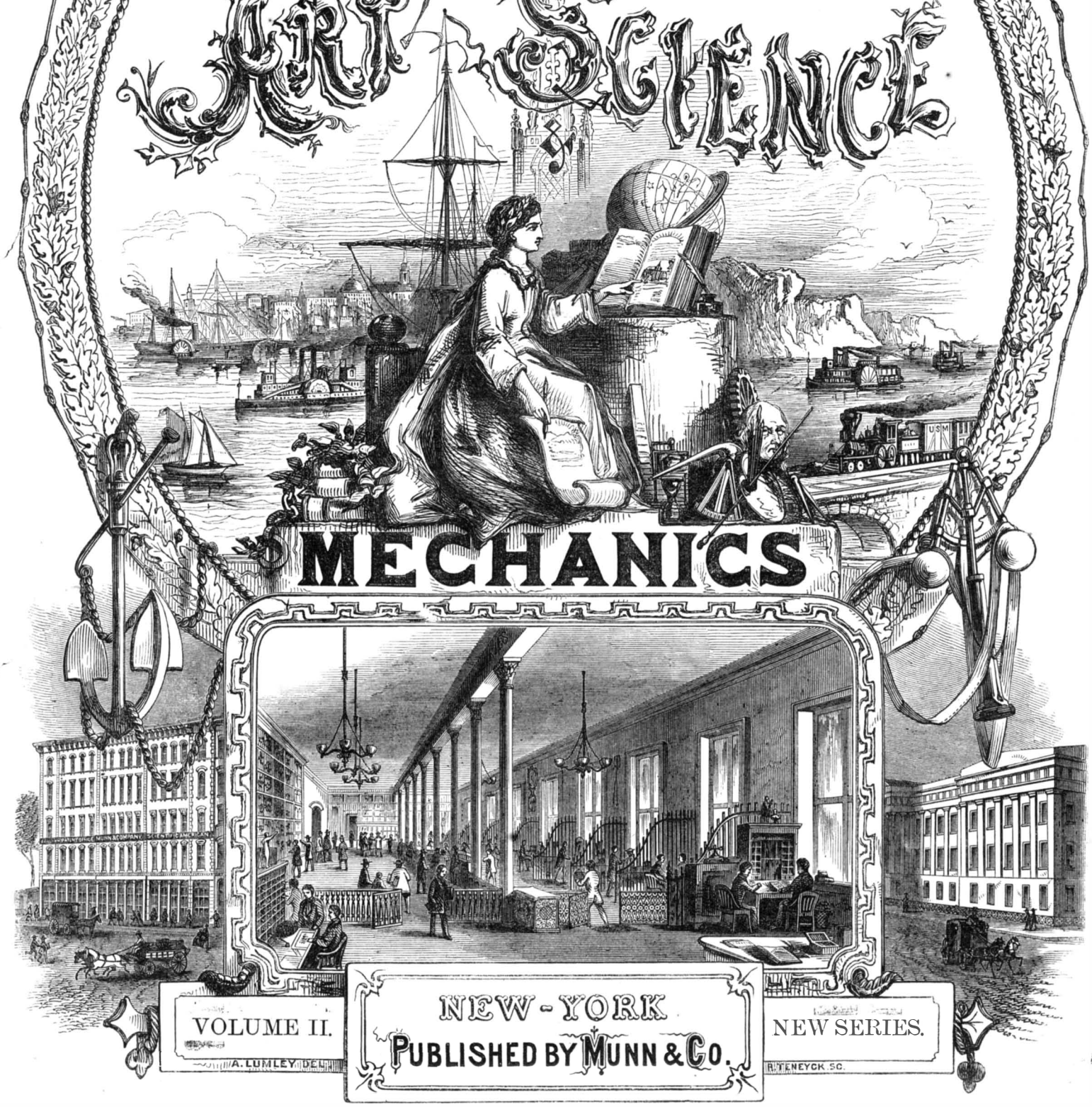
AN ILLUSTRATED

JOURNAL

OF

ART & SCIENCE

MECHANICS



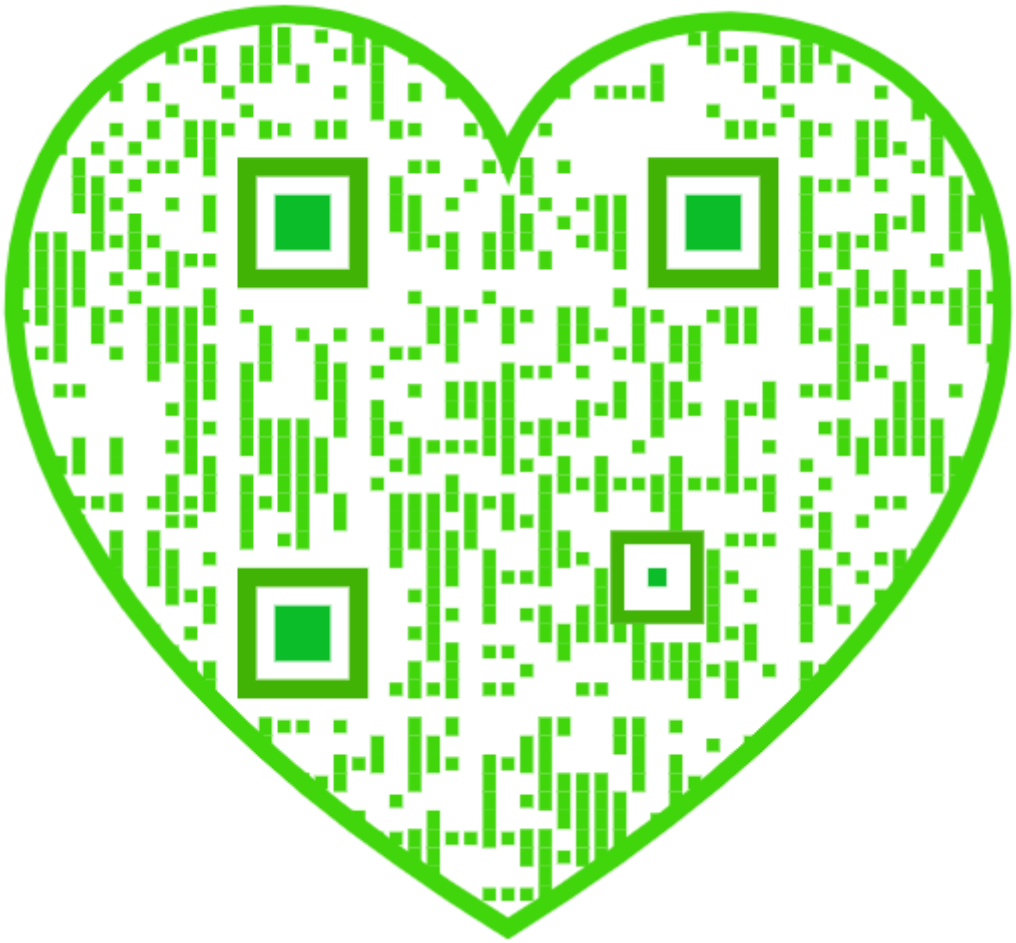
VOLUME II.

NEW-YORK

PUBLISHED BY MUNN & Co.

NEW SERIES.

© 1860 SCIENTIFIC AMERICAN, INC.



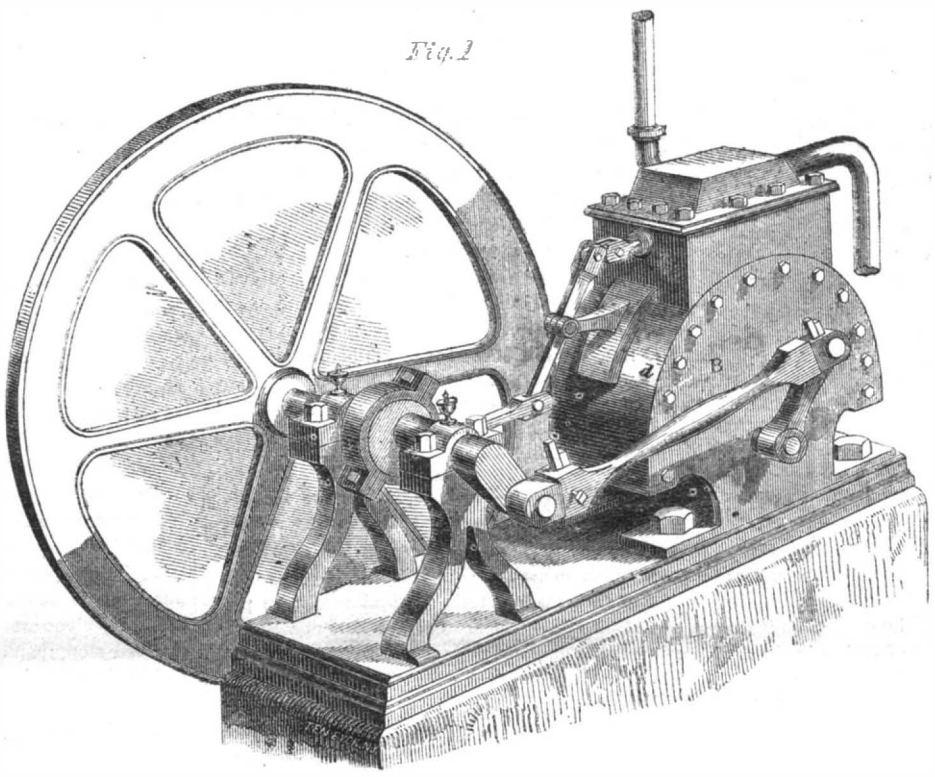
Scientific American.

JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES

VOL. II.—No. 1. NEW YORK, JANUARY 2, 1860. NEW SERIES.

RUNKEL'S OSCILLATING PISTON ENGINE.

The annexed cuts represent a more novel steam engine than we have seen for some time; Fig. 1 being a perspective view, and Fig. 2 a vertical section. The chamber, *b*, which performs the office of the cylinder of the ordinary engine, is formed by the semi-circular plates, B, and its fellow, and the curved plate, *d*, which closes the space between the other two.



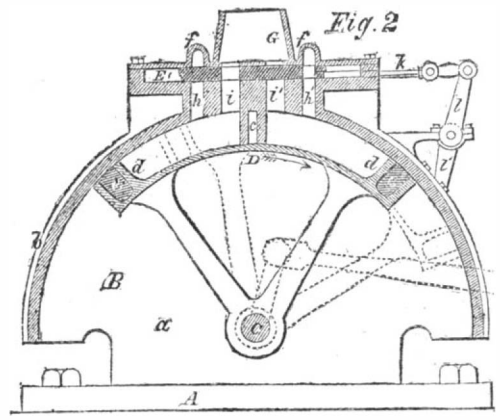
The piston is the segment of a wheel oscillating upon the center, C, and carrying the curved plate, D, and the two abutments, *e e*, which fit steam-tight between the plates, B. Directly over the center, the abutment, *c*, is fastened between the plates, B, and is provided with packing at its lower end to fit steam-tight the curved plate, D, which rubs against the packing in its oscillations back and forth. The abutments, *e e*, are also packed, and the edge of the curved plate, D, is either packed or ground to fit steam-tight the inner surfaces of the plates, B. E, is the steam chest, *h* and *h'*, the induction ports, *i* and *i'*, the exhaust ports, and F, a sliding valve which is connected by the rod, *k*, and lever, *l*, with an eccentric on the main shaft; this connection secures the opening and closing of the ports exactly at each half revolution of the fly wheel. The cut represents the induction port, *h'*, open and the exhaust port, *i'*, closed, while, of course, the induction port, *h*, is closed, and the exhaust port, *i*, is open, and the piston is moving in the direction indicated by the arrow. When the piston reaches the position shown by the dotted lines, the eccentric will slide the valve so as to admit the steam against the opposite abutment, and open the exhaust port, *i'*, thus reversing the motion. The crank, H, shown in dotted lines is rigidly secured to the shaft, C, and is connected to a crank on the shaft of the fly wheel in a way to cause the fly wheel to revolve by the oscillations of the crank, H.

The patent for this invention was issued (through the Scientific American Patent Agency) on April 12, 1859, and any further information in relation to it may be obtained by addressing the inventor Mark Runkel, 172 Center-street, this city. Patents have also been secured for this invention in England, France and Belgium, through our agency.

DARK CLOUDS.

Combined with much success in 1859, there has also been considerable disappointment experienced in some enterprises which had excited much public hope. The *Great Eastern*—the most wonderful effort in shipbuilding ever attempted—has not yet reached our shores; although, for a period, we were all "on the tip-toe" of excitement in expectation of her arrival about three months ago. Thus far she has not come up to the expectation of anybody, nor to the promises held out respecting what she was to do; and a committee of inspection has just pronounced her unfit for an ocean voyage until a vast amount of additional labor is expended and many new changes made in her. The Winans "cigar-steamer" has been greatly changed since her first trip; it is said that she now does tolerably well, but will do much better when she is still further lengthened and otherwise altered. Public attention has been directed to iron screw steamers as offering inducements to our shipbuilders to enter into competition with those of Scotland and England. Several defects in the construction of such vessels have been discovered by the loss of two of their number which suddenly went to pieces on rocky coasts; still these have afforded useful lessons for our nautical architects.

The balloon voyage across the Atlantic has not yet been accomplished; neither Professor Wise, La Mountain nor the redoubtable Lowe has yet achieved the grand problem; but for all this, the flying efforts of the past year furnish some of the most remarkable episodes in the history of ballooning. The perilous voyage from St. Louis to Lake Ontario, and the still more wonderful and dangerous aerial trip of La Mountain and Haddock into the wilds of Canada, at the fearful velocity of *one hundred miles per hour*, during darkness, will be quoted among the most thrilling adventures ever experienced in ballooning.



The Atlantic telegraph cable has become mythical. Efforts were lately made to raise more capital and undertake the construction and laying of a new cable, but these we understand. have proved abortive of any good result, and probably such a gigantic enterprise may never be again attempted, or not for a number of years at least. Improvement in the construction of cables and in methods to obviate induction may yet lead to the laying of another cable through the entire ocean to Europe; but at present the attention of telegraphers is fixed upon the laying of short submarine cables, such as one through Behring's Straits, in the north-west, or that by way of Iceland, the Faroe and Shetland Islands, to connect the Old and New Worlds. Our countryman, Mr. Tal. P. Shaffner, has recently delivered a lecture on this subject in Glasgow, Scotland. He has made a survey of the northern seas, and has a charter, from the King of Denmark, for the right of way to carry the line through Iceland and Greenland.

Severe losses have been experienced in the decease of eminent scientific personages. Humboldt, Brunel, Stephenson, Lardner and Nichol, have paid the debt of nature during 1859, and three of these were men in the very vigor of life. Prescott and Irving, our great and gifted American writers, are with us no more; death has been very busy among great men.

UNIVERSAL DISINFECTANT.

We translate the following from the November number of *L'Invention*, published at Paris:—

Mr. Vaz exhibits some samples of a substance, suggested by Mr. Moll, which has the property of almost instantaneously disinfecting putrefying matter, privy vaults, &c. A very small quantity is required, and experiments made at La Patrie, at the Imperial Asylum of Vincennes, and by the "Circle of the Scientific Press," have given the most satisfactory results. It is prepared as follows:—Sulphate of iron and sulphate of alumina are dissolved in water; the solution being of a strength of 55°. This is evaporated for eight or ten hours in order to obtain a hard and compact cake which may be transported in sacks to great distances. During the evaporation, 8 or 10 per cent of lime is mixed with the compound, which is finally run into forms and dried perfectly in the air. After it is positively ascertained that it contains no moisture, it is reduced to powder more or less fine, and delivered to the consumer, who may keep it any length of time either in powder or in solution. This disinfectant has no odor, and it may be employed for a great number of hygienic and domestic purposes. The sulphate of alumina is made by dissolving alumina in sulphuric acid. It is one of the constituents of all the alums.

© 1860 SCIENTIFIC AMERICAN, INC.

HISTORY OF THE "HOT BLAST" IN IRON MAKING.

The use of the "hot blast" in smelting iron has proved to be one of the most original and valuable inventions on record. It is now employed in all countries, and its importance is felt and acknowledged everywhere. In our last volume, we presented an illustrated history of the apparatus for heating the blast, and it has afforded us pleasure to have received several letters expressing sincere satisfaction regarding the publication of that information. We now present something more relating to this invention, from *the inventor himself*, who is still living, which makes the matter doubly interesting. Our information we obtain from a paper read before the Institution of Mechanical Engineers (England) by Mr. Neilson, and lately published in the London *Mechanics' Magazine*.

Six or seven years before the invention of the hot blast was brought out, Mr. Neilson had read an essay before the Glasgow Philosophical Society, on the best mode of taking out the moisture from the atmospheric air, in summer time, previous to its entrance into the tweers of iron furnaces, as it was found that the manufacture of iron was much impaired in summer both in quality and quantity, and he had become satisfied that this was owing to the greater amount of moisture in the air at that season. His first proposed method was to pass the air through two long tunnels containing calcined lime, and thus dry it thoroughly (by the lime absorbing the moisture) on its passage to the cylinder of the blowing engine, but this plan was not put on trial. About this time his advice was asked by a friend—Mr. James Ewing, of the Muirkirk Iron-works—in regard to a blast furnace situated half a mile from the blowing engine, which did not obtain a sufficient supply of air at that distance, and of course did not make so much iron as two furnaces close to the blowing engine. It then occurred to him that, as air increased in volume according to its temperature, if it were passed through a red hot vessel before entering the distant furnace, its volume would be increased, and it might be enabled to do more duty in the furnace. Being at that time engaged as engineer in the Glasgow Gas-works, he made an experiment upon the illuminating power of gas supplied by heated air, brought up by a tube close to the burner; and he found that, by this means, the combustion of the gas was rendered more perfect and intense, so that the illuminating power of the particles of carbon in the gas was greatly augmented. He then tried a similar experiment with a blacksmith's fire by blowing heated air into it, by which the fire was rendered most brilliant, and the heat exceedingly intense in comparison with another fire supplied with cold air in the usual manner. Having obtained such remarkable results on a small scale, it occurred to him that a similar increase in the intensity of heat could be obtained on a large scale in large blast furnaces; but being a gas-maker, he could not persuade iron-masters to allow him to make the necessary experiments. At that time there was great need of improvement in the working of iron furnaces, as many of them were standing idle for want of the blast because they were unable to supply the necessary heat for smelting the iron, and unless £6 ($29.10) per tun could be obtained, no profit was realized. A strong prejudice then existed against meddling with the furnaces—a sort of superstitious dread of change prevailed, owing to the great ignorance of furnace managers with respect to the real action going on in the furnace. Mr. Neilson at length succeeded, however, in inducing Mr. Charles Macintosh, of Glasgow, and Mr. Colin Dunlop, of the Clyde Iron-works, to allow him to make an experiment. This was done, and although the air was only raised 50°, it showed a marked difference in the scoria—more iron was obtained from the same quantity of ore than before. This only made him anxious to try his plan on a more enlarged and perfect scale, but he was still retarded by the iron-masters—they objecting to any alteration in the furnace. In one instance, when he succeeded so far as to be allowed to heat the blast, he wanted to make a bend in the pipe to bring the air more closely to the sides of the heated metal and increase the area of heating surface, to elevate the temperature; but his request was refused, and it was asserted that if the pipe were bent the furnace would cease working. These prejudices proved serious obstacles to early success; and it was two or three years after this before he was allowed to put a bend in the main heating pipe. But after years of perseverance, he was at length enabled to work out the plan into a definite shape at the Clyde Iron-works of Mr. C. Dunlop, near Rutherglen, in Scotland.

The invention of the hot blast in smelting iron consists solely in heating the blast between the engine-blower and the furnace, and it is not associated with any particular construction of the intermediate heating apparatus. This was the cause of the success which had attended the invention; and in this respect it had much similarity to that of his countryman, James Watt, who, in connection with the steam engine, invented the plan of condensing the steam in a separate vessel from the cylinder, and was successful in maintaining his invention by not limiting it to any particular construction of condenser. Mr. Neilson was glad to say that the English iron-masters had stood by him in the attempts made, in the early times of the hot blast, to deprive him of the benefits of his invention; and to them he was indebted for the successful issue of the severe contest he had then gone through.

Such is the substance of Mr. Neilson's paper. His invention is in very general use in this country, and it has been the means of enabling us to smelt ores which, otherwise, would now have been lying in the earth as useless as the sand by the sea-shore. In Scotland it has been the means of enabling iron manufacturers to produce pig iron, with a profit, for £2 16s. instead of £6—the former being less than one-half the price of what it was forty years ago. Mr. Neilson was not an iron manufacturer, hence he had great difficulties to overcome in introducing his invention; and had he taken out an American patent, it certainly would have been forfeited by our law (as discussed by us on page 401 of our last volume), which would have been a case of great hardship and injustice. It seems that his own countrymen tried to rob him of the benefits of his invention, but he triumphed over them through the sturdy support of English iron-masters; and he is now, in his old age, enjoying his *otium cum dignitate*.

PATENT RIGHTS.

MESSRS. EDITORS:—There is one feature about the "patent right" business which I think is very reprehensible; I allude to the practice of patentees allowing manufacturers to use and introduce their patents on the articles of their manufacture. I speak now more particularly about railroad cars. On most cars now running, there are half a dozen or more patent fixtures about them which railroad companies know nothing about when purchasing the cars. The *modus operandi* (seemingly at least) of the business is for patentees to get car manufacturers to apply the patented fixtures on their cars. The railroad companies buy the cars, knowing nothing about the patents; and if they afterwards build any cars for themselves, they usually build the same kind of cars, more for the sake of uniformity than anything else; and, of course, they use the patented fixtures, not because of any merit of the patent (for it may be some little insignificant thing), but because they are ignorant of its being patented; and to make their cars uniform. Thus the patentees get their patents introduced throughout the country without expense to themselves. Then, a year or two before their patent expires, they are calling on railroad companies for pay, and threatening injunctions, &c. The railroad companies then learn, for the first time, o. the existence of such a patent. I am in favor of inventors getting the most out of their inventions, but think they should let their patents stand on their own merits. For my part I never heard of a professional *car manufacturer* being sued, or made to pay anything for building such cars, for such a practice would militate against the pecuniary interests of the patentees, who then might properly exclaim, "Othello's occupation's gone!"

J. W. H.

[Our correspondent has not given this subject a just consideration. He should have charged the railroad companies with the reprehensible conduct which he attributes to patentees. How can a patentee know beforehand *who* is going to infringe his invention? and how can he claim damages for infringing his patent rights *until* they are infringed by such companies? The charges brought against patentees, by our correspondent, surprise us. He seems to consider it the duty of inventors to trudge round the country, informing railroad companies of their inventions, aud warning them against infringement. That is not their business, and the most of them could ill afford to do so. It is the duty of railroad companies and others to inquire into the character of the cars, machines, or whatever else it may be, which they design to purchase or construct; they should see to it that they are not about to infringe a patent. When person is going to purchase a house or a piece of land does he not have the County Clerk's book examined carefully, to see if there is any encumbrance on the object of his purchase? And why should it not be every wise with patented property? The Patent Office is such place of record for the sale, license, and issue of patented article; it is one of its functions to supply information upon the payment of requisite fees; and we therefore have no feeling for those corporations which our correspondent has so touchingly set up as being injured and afflicted parties. It is really ridiculous to blame inventors for permitting railroad companies to infringe their patents, when these parties do so without the inventors' knowledge or without asking their consent. To say that such companies only adopt the improvements referred to, "for the sake of uniformity," will not *go down* with us. We know it to be a fact that powerful corporations are very much given to appropriate the inventions of patentees, especially those whom they consider to be poor men, and who may be baffled and "fought out" by lawsuits. We have no sympathy for them, because, if they are imposed upon in the use of an invention, they have an honest, just and fair remedy in a trial at common law, where the amount of damages is awarded according to the circumstances of the case. The superintendents, directors, engineers, car-builders, and others connected with railroads have no ground for pleading ignorance regarding inventions relating to their cars or machinery. The claims and lists of all patents issued have been published regularly every week in the columns of the SCIENTIFIC AMERICAN for the last 14 years; and had they desired to be "posted up" in the history and nature of inventions, they could have obtained such information by becoming subscribers to our journal. It is impossible for any person connected with the management of railroads or manufactories to keep well-informed in his business unless he reads our pages weekly; they are the lights and the only records for full and correct information on the subject of patents in this country. If such persons as railroad men, who are so much interested in improvements, shut their eyes upon the light, they alone are blameable. We thus write for their interests more than our own; inventors' rights are just and lawful, and should be enforced at all hazards.—EDS.

PATENT LICENSES AND SUITS.

A peculiar case relating to patents was decided in the United States Circuit Court, this city, on the 15th inst. A suit was instituted some time ago by Mr. Charles Goodyear against James Bishop and others, to recover damages for infringing his patent; and he brought the action against the defendants at the request of the Union Rubber Company, to whom he had given an exclusive license in the manufacture of certain kinds of vulcanized goods. Mr. Goodyear subsequently requested the suits to be discontinued, and moved for an order from the court to this effect, which motion was resisted by the company referred to, who claimed the suit to be under their control and that they could continue it against Mr. Goodyear's wishes. The decision was against the company. It was held that, as a general rule, at common law, a choice in action cannot be so assigned as to allow the assignee to bring a suit at law upon it in his own name, and where he brings a suit in the name of the assignor, the assignor is not allowed to control it to his prejudice; that neither by the common law nor by the patent law can the Union Rubber Company be deemed to be assignees of this patent; neither has the whole property in it been parted with, nor an undivided part of the whole extent of the patent throughout the United States; they are merely licencees, and the control of the patent remains in Goodyear, who gave them the license. Goodyear could surrender the patent to the Patent Office, and thus compel a discontinuance of the suit; and if he could effect it in that way, there is no reason why he cannot in a more direct way. The motion for a discontinuance was therefore granted.

At the California State Fair which was held at Sacramento in October last, two fleeces of wool were exhibited, which we believe are the heaviest that ever were shorn in muttondom. One fleece weighed 43½ lbs., the other 32¾ lbs., and the wool was fine and of a superior quality.

© 1860 SCIENTIFIC AMERICAN, INC.

THE SCIENCE OF SKATING.

It is not only in what are called "great inventions" that we have made vast progress and improvement, but in every branch of manufacture, and in every species of article used by the human family. We have become, in the present practical age, great in small things, from the fabrication of a pin to the construction of a steamship. Articles of amusement, as well as those of daily use and necessity, have not been passed by unheeded. The humble skate, with which our youth enjoy themselves in the clear, cold days of winter—gliding, with lightning foot, upon lake, pond and river—has not been overlooked in the march of improvement. On page 112, Vol. I. (new series), SCIENTIFIC AMERICAN, we illustrated a skate constructed upon a new principle; and on another page of this number our readers will find a very novel one illustrated and described.

The Holland skate, with the runner secured in a shoe-upper, appears to be growing in popular favor; and certainly our old-fashioned skates have far too many troublesome straps about them. The runner which is coming into more general use is devoid of a groove on the face, and skaters assert that they can "go much faster with it," but cannot turn so rapidly. The old curled-up point is also losing caste, and it is time that this feature (borrowed from a Chinese mandarin's slipper) was entirely abandoned.

We have some reason to feel conceited of our skates in these days, when we compare them with those worn by our forefathers, about 700 years ago. An old London historian, describing the winter sports of the youth in that city in the twelfth century, says (about a frozen pond in Moorfields): "Many young men play upon it—some, striding as wide as they may, do slide swiftly; others make themselves seats of ice as great as a mill-stone; one sits down; many, hand in hand, do draw him; and one, slipping on a sudden, all fall together. *Some tie bones to their feet and under their heels*, and, shoving themselves with a little picked staff, do slide as swiftly as a bird flyeth in the air, or an arrow out of a cross-bow. Sometimes two run together with poles, and hitting one the other, either one or both doth fall, not without hurt—some break their arms, some their legs; but youth desireth of glory in this sort—exerciseth itself against the time of war." These old-fashioned skate-runners were made of the shank bones of oxen, and were highly polished. They are sometimes dug up now in the vicinity of London, and afford a useful lesson in regard to the progress we have made in making skates. A steel runner of a skate, such as that which now costs only a few cents, could not be then obtained in famous London "for love or money."

Skating is a most invigorating and pleasant winter amusement, and the authorities of New York have very wisely laid off a pond of 20 acres in the Central Park for such exercises. This pond was thus used last winter, and the scene was sometimes lively and brilliant. Several ladies appeared frequently on the ice, and rivaled the young men in rapidity of motion and grace of evolution and it is expected that the scene will be intensely captivating and exciting this winter. All the youth in our land should learn to skate—every girl and boy within the domains of icedom. In several of the cities and villages on the Hudson river, very many of the ladies are excellent skaters; and we understand that ladies' skating clubs have recently been formed in a great number of places. This movement is a sensible one, and deserves all praise; no winter exercise is more healthful. In Holland, all the Dutch lasses appear to skate as naturally as ducks take to water. Hundreds of them may be seen every morning in winter, sweeping on their skates along their frozen canals to market, with baskets upon their heads, which they manage to balance steadily, while they move as gracefully as posture-masters.

SOAP PATENTS—SOAP WITHOUT BOILING

If, according to Professor Liebig, the amount of soap used by a people may be taken as a very good index of its civilization, we undoubtedly must stand very high, as we believe there is more soap used in the United States than in any other country. The great number of patents issued for various kinds of soap afford evidence that inventors still find this field open for improvements. The following are the specifications of two soap patents:—

I.—Patent issued to Stephen Strong, of Birmingham, Pa., on April 5, 1859. The nature of the improvement consists in compounding tallow or fat, rosin, caustic lye, carbonated lye or palm oil, slacked lime water and soda ashes, in the proportions as follows, to make rosin soap without boiling:—Melt first 100 lbs. of tallow or fat with 200 lbs. of rosin, then heat this mass to 70° or 80° Reamur, and add 150 lbs. of pure cold caustic lye; stir the mass well during the process, and when the whole is well combined, which will be in about from three to four minutes, add 75 lbs. of carbonated lye, and the result will be a fine, hard, light yellow soap. The entire process of saponification occupies from five to seven minutes. The process and ingredients may be varied as follows:—Melt 100 lbs. of tallow or palm oil with 200 lbs. of rosin, heat the mass to 70° or 80° Reamur, then slack 30 lbs. of lime in 190 lbs. of water, and in this milk of lime dissolve 80 lbs. of soda ash; strain this mixture through a seive into the melted fat and rosin, stirring the whole during the process, and in about four to seven minutes, the result will be a fine, hard, yellow resin soap. By this process soap may be made cheaper and quicker; it is a simple method and very few fixtures are required for its manufacture. It contains an excess of soda, and is therefore capable of washing well with hard water. By the use of lime in the second described method, the water of crystallization is so completely taken up in the soap that, unlike any other resin soap, it loses very little weight in drying. It makes a hard soap.

II.—Patent granted to Augustus Miller, of Grafton, Ohio, on April 20, 1859. The nature of this improvement consists in the compounding of the ingredients as follows to produce a valuable soap for washing and toilet purposes:—Take 6 gallons of pure, soft water; 6 lbs. of German erasive soap: 1 lb. of soda; 4 oz. of sulphuric ether; 3 oz. of aqua ammonia; 2 oz. nitric ether; 2 oz. nitrate of potassa; 1 oz. of alum; 2 oz. of spirits of camphor; 2 oz. of gum resin. Unite them thus:—Place the water in a metallic vessel of suitable size, and bring it to the boiling point; then add the German soap, stir it till it is dissolved, then add the other ingredients named in the above order as enumerated. They require constant stirring for five minutes after all are added, when the compound may be poured out into suitable vessels to cool, or into molds, and the process is completed. The above quantities will make 50 lbs. of good, soft, chemical soap.

COAL OIL MANUFACTURE.

An approximative estimate of the quantity of illuminating coal oil manufactured daily in the United States, during the month ending December 31, 1859, exhibits the following figures:—

Name or place of works.	Gals.	Name or place of works.	Gals.
Downer, Boston, Mass.....	1,500	K. C. C. M. & O. M. Co., Kanawha, Va.....	300
Glendon, Boston, Mass.....	1,000	G. R. C. & O. Co., Kanawha Va.....	300
East Cambridge, Mass.....	800	Greer, Kanawha, Va.....	200
Page & Co., Mass.....	600	Staunton, Kanawha, Va....	—
Suffolk, Mass.....	300	Atlantic, Kanawha, Va.....	—
Portland, Maine.....	500	Maysville Co., Ky.....	400
New Bedford.....	300	Union Co., Ky.....	600
Hartford, Conn.....	200	Ashland, Ky.....	—
Kerosene, New York.....	2,500	Covington, Ky.....	—
Columbia, New York.....	800	Breckinridge, Ky.....	250
Carbon, New York.....	300	Newport, Ky.....	300
N. Y. C. O. Co., New York..	400	Eureka, Cincinnati, Ohio...	600
Empire State, New York....	200	Rosecrans & Co., Cincinnati	300
Several others in New York.	500	Phœnix, Cincinnati.....	200
Philadelphia, Pa.....	500	St. Louis, Mo.....	200
Pittsburgh (four firms).....	2,000	Otherwise.....	3,500
Great Western, Ohio.....	500		
Newark Region, Ohio.....	2,500		
Wheeling, Va.....	200		
Total number of gallons daily.....			22,750

We will not assert that the estimate is quite correct—some establishments are probably over, others underrated; we believe that the sum total is a pretty close approximation to the actual quantity of burning coal oils now made daily in this country. The produce of the oil springs has been omitted, as a reliable statement about their produce could not be procured. We will now draw a few general conclusions. It is presumed there have been sold by the several manufacturers of coal oil lamps and burners from 250,000 to 300,000 doz. burners and lamps, of which about 150,000 dozens are in use, the balance being in the hands of dealers. A coal oil lamp will consume about four gallons of oil during the year. The amount of oil burned by the above 1,800,000 lamps is consequently 7,200,000 gallons per year, or about 20,000 gallons every day. This shows that the amount of oil manufactured is in advance of the amount consumed.

In order to make 22,750 gallons of burning oil it will require 75,000 gallons of crude coal oil, to make which requires 60,000 bushels of cannel coal.

It will cost, to build crude oil and refining works, to make the named quantity of oil each day, $3,000,000; but the actual outlay for the oil-works at present at work does not fall short of $8,000,000.

The value of chemicals used in the purification of coal oil will amount to over $2,000 per day.

The number of barrels used to hold coal oil will be between 500 and 600, representing the value of $1,000 and the labor of 400 men.

The value of the burning coal oil itself will amount to over $16,000 per day, or more than $5,000,000 a year.

All of this does not include heavy oil and paraffine, the sale of which is limited and uncertain.

The number of workmen employed in the several coal oil-works in this country will reach 2,000; that of the miners engaged in mining cannel, 700 or more. Besides this, there are a large force of men employed in making lamps, burners, wicks, chemicals, &c.

If we take into mind that, two years ago, there were only two or three oil-works in this country, the above statements form a strong illustration of the impetuous energy with which the American mind takes up any branch of industry that promises to pay well. As far as coal oil is concerned, the rapidity with which the manufacture of this beautiful illuminator has been propagated amounts (like the cultivation of the *morus multicaulis*, some years ago) to a mania.

APPLICATIONS FOR THE EXTENSION OF PATENTS.

Power Looms for Carpet Weaving.—Erastus B. Bigelow, of Massachusetts, obtained a patent dated Feb. 18, 1846, for a valuable improvement in looms for weaving carpets. The patent was re-issued during the same year, and embraces seven claims. He has applied for an extension of this patent for seven years, and the case is to be heard at the Patent Office Feb. 6th. The testimony (which must be in writing) will close at the Patent Office on Jan. 23d.

Air Distributors.—Laban Morse and Whitman T. Lewis, of Athol, Mass., obtained a patent on May 16th, 1846, for an improvement in air-distributors for chambers of combustion. The petition in this case is to be heard at the Patent Office April 23d. The testimony closes on April 9th. This invention has been illustrated in the SCIENTIFIC AMERICAN, and is extensively used for burning tan and other refuse matter.

Tea Kettles.—Ezra Ripley, of Troy, N. Y., obtained a patent on March 14, 1846, for an improved tea kettle. He has applied for an extension of his patent, and the petition is to be heard on Feb. 27th. The testimony closes on Feb. 14th.

AMERICAN WHALEMEN.—Snow, is his "Voyage to the South Seas," pays the following just tribute to American whalemen: "Whaling is followed up principally by the Americans, who occasionally make their call at Stanley, but form their headquarters at New Island, in the Western Falklands. Several very fine vessels have been known to cruise about these seas; and, from the many whalers I have in my different trips come across, I imagine they do not find it a losing speculation. They are rough and hardy seamen, but much more intellectual and attentive to the science of the sea than would be supposed. A proof of this is seen in the varied information they send to the Hydrographic Department of their home government; and, indeed, in this respect, I cannot help saying that I think the whole of the American mercantile marine get ahead of us most considerably. As a class, they are a highly intelligent and competent body of men; their ships are a model to the eye, and a pride to a seaman's heart; and, speaking of my own experience, I have ever found much courtesy and ready aid extended to me, whenever needed, by them."

WE are indebted to W. B. Spies, editor of the *Mining Record*, Pottsville, Pa., for copies of Judge Grier's charge to the jury and remarks to the counsel in the case of Joseph Battin *vs* the Lehigh Coal Company, for infringement of the Coal-breaker patent. The whole effort of the learned judge seems to us partial and unfair, and we propose at some future time to examine into the matter more fully. We hope we may, upon further investigation, find our surmises not well founded.

© 1860 SCIENTIFIC AMERICAN, INC.

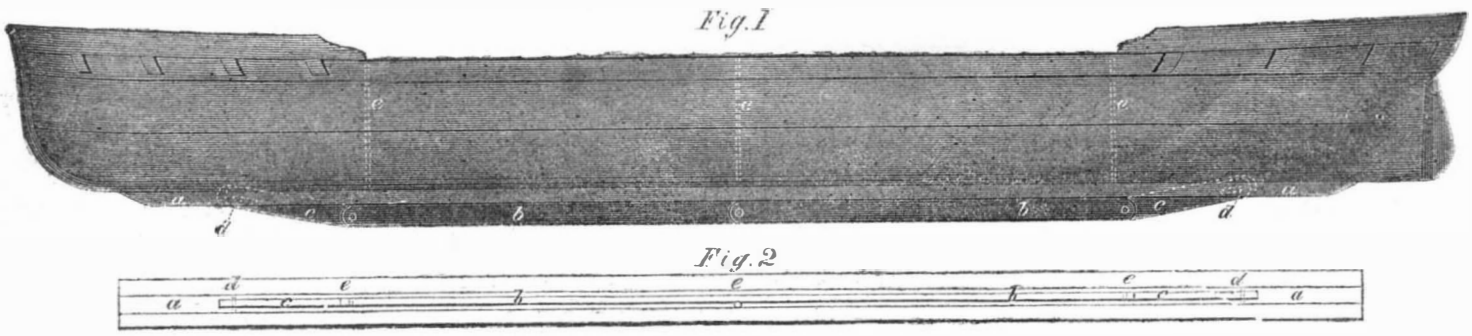
MASKELL'S SLIDE KEEL.

Some time since we published a notice of an invention by Thomas Maskell, of Franklin, La., designed as an improvement on center-boards for vessels. After the publication of that notice, a gentleman of this city entered into correspondence with Mr. Maskell on the subject, the result of which was that Mr. M. came to this city, and after making arrangements with his correspondent, returned to Louisiana and submitted his plans to the governor of that State; thence he went to Washington and showed his plan to the Secretary of the Navy, who appointed a board of officers to examine it and report. Mr. Maskell next proceeded to Paris and submited his ideas to the Society of Inventors and Artists of France. The committee of the United States Navy having reported favorably in regard to the plan, and a sloop of war being now in process of construction at the navy yard, in Philadelphia, we present a full illustration of the invention.

It consists essentially in making a deep, narrow channel, or slit, in the bottom of the keel of a vessel, into which a false keel is fitted in such manner that it may be drawn in, in shallow water, and lowered down where the water is of sufficient depth. Fig. 1 is a side view of the vessel and keel, and Fig. 2 a bottom view of the keel looking up. In the keel, *a a*, a channel is cut, the depth of which is shown by the dotted lines. Into this channel the false keel, *d d*, fits loosely, and may be drawn into it by means of the rods, *e e e*, which pass up through the middle of the vessel to the deck, where they are provided with screws and nuts, or other suitable device for raising and lowering them. The false keel or center-board, is supported at its ends by the pieces, *c c*, which are pivoted to it at one of their ends, and supported at their opposite ends by the pins, *b b*, which pass through slots in them, as shown, this arrangement being manifestly to allow the pieces, *c c*, to slide longitudnally and thus permit the vertical motions of the false keel, *d*.

In regard to the advantages of this arrangement, the inventor says, "The old-fashioned sliding keel is objectionable, as the 'well' or opening in which it slides runs fore-and-aft of the vessel for one-fourth or one-third of her length, and requires the deck floors, beams and frames for that length to be cut entirely through, thereby much diminishing the strength of the hull. The present plan requires no such cutting through; the hull is built in the usual way, except the recess in the main keel. For vessels navigating the shallow rivers and bays of our southern coast, the device must prove valuable, particularly in the cotton district."

Persons desiring further information in regard to this sliding keel, may address the inventor at Franklin, La.



MASKELL'S IMPROVED SLIDE KEEL FOR SHIPS.

SUBSTITUTE FOR GUTTA-PERCHA.—According to Dr. Kirr, when the bark of the linden is boiled for some time in water, it becomes soft, supple, and susceptible of taking all kinds of forms, which it preserves on becoming hard by cooling. This property it preserves after having been used, so that it can be used again for different purposes; according to this, the bark of the linden may be to a certain extent substituted for gutta-percha.—*Annales Med. de la Flandre Occident.*

A new iron steamer, called the *S. R. Spaulding*, has been added to the fleet belonging to the Baltimore and Boston Steamship Company. The people of Baltimore seem to be more enterprizing than those of Boston in building steamers, as they own two-thirds of the stock belonging to this company.

STEAM CARRIAGES FOR COMMON ROADS.

In a recent article on this subject in the *New York Daily Times* a great amount of strong faith is exhibited in the success of such agencies; and among other interesting information contained in it, we are informed that a British steam carriage for common roads is now in actual service in some part of the United States. It recommends their more general use, and rather stigmatizes our people as being old fogyish in regard to iron steamships, puddled steel, steam agriculture, coal-burning locomotives and steam carriages for common roads. The practicality of such engines has long ago been demonstrated, just like electro-magetic engines, but their ability to operate successfully, and to operate economically in competition with other agencies, are two different questions. Viewing this question in the economical light, it appears to us that there are scarcely 50 miles of road in this country where they could be employed successfully. In the well-paved streets of this city, a steam carriage might run very well and economically, and it would be hailed as a general benefactor if the crowds of animals which draw vehicles in our public thoroughfares were superseded by safe steam carriages, but until street railroads are permitted to use steam horses, there is no use of advocating their employment for other purposes.

Our common turnpike roads, in their present condition, do not seem to be fit for their successful operation. It is well known that the defective permanent way of many of our railroads has been the cause of their failure to pay the great running expenses thereby entailed for wear and tear, and the interest on the invested funds. When this is the case on a railroad, where the resistance is so much reduced, that one horse can draw as much as 10 on a common road, how can steam carriages be profitably employed on the latter? The concussions experienced in running, and the great amount of wear and tear for breakages that would thus be involved, seem to present insurmountable obstacles to their success. But as we have said essentially before, this is a question of profit and loss entirely; and we therefore hope the English steam carriage will have a fair trial, and that a candid and full report will be given to the community regarding its performances. That roads can be made whereon such steam carriages can be worked successfully, especially for drawing heavy loads, we have no doubt whatever. We have advocated the employment of properly constructed small locomotives for street railroads, as they can be as easily managed as horses, and we would be glad to see them adopted in place of the much-abused brute, under every circumstances. We therefore hope that improvements will be directed to the proper source for rendering them successful on common roads, namely, to improve the roads first.

THE OLDEST STEAMBOAT KNOWN.—The steamboat *Saratoga*, which was cut through by the ice on Sunday, and sunk, in the bay opposite New Hamburgh, was probably the oldest steamboat known in the northern waters. She was built in 1825, by W. C. Redfield, of New York, to run to Hartford, Conn., and was then christened the *Oliver Elsworth*. It was the first effort of Mr. Redfield in steamboat building, and, at that time, it was considered a highly successful experiment. In 1837, she was transferred to the Hudson river, where she ran for a long time as a passenger boat. About 1848, she changed hands, when she was re-built, lengthened, and her name changed to *Saratoga*. From that date up to the time of the disaster she has been employed in towing river craft between Troy and New York. She may yet be placed in a condition to perform more labor and remunerate her owners. Soon after the ice struck the *Saratoga* she commenced filling, and went down stern foremost in about 50 feet of water. As she was sinking, the hawsers attached to her tow were thrown off, and the captain, with the crew and passengers, escaped in a small boat. He spent Sunday night on Barren Island, and was taken off yesterday.—*Albany Eve. Jour. Dec.* 13.

CITY BOILER INSPECTION.

The committee of Councilmen (of this city), that was appointed some time ago to enquire into the expediency of inspecting all steam boilers, have presented a report recommending the appointment of an Inspector at $1,500, and an Assistant Inspector at $1,000, whose duty it shall be to examine all the steam boilers of the city once a year, and give a certificate if everything is found to be right, for which document the owner is to pay $10 to the Comptroller. The working of a boiler after the certificate has been refused will be made punishable by fine. The receipts from the $10 fees are to pay the salaries and other expenses. If the inspection fee were $3 it would give, in the aggregate, a sum ample for all the expenses, and if competent and honest men were appointed to fill the Inspectorship, the ordinance would not be hard upon boiler proprietors, and would confer benefit on the city in diminishing the number of boiler explosions.

THE FRIGATE NIAGARA.

This noble steam war vessel is "laid up" in the Brooklyn navy yard, and a report has been circulated that it is a failure as an effective ship for war purposes; and that it is withdrawn from further active service. As the *Niagara* was built by the late distinguished George Steers, and as it has frequently been pronounced a model war ship, it is rather strange now to hear of its condemnation. We have heard it stated that although its form is good for quick sailing, it is very defective in other respects. In proportion to its size it carried a very small armament, and while it exposed a much greater surface than a smaller frigate, it could not carry so heavy a battery. On the other hand, it has been stated that the unfavorable reports circulated about the *Niagara* originated with government naval constructors; they being envious on account of Mr. Steers having been selected, for his abilities, to construct this vessel out of the usual routine of the navy department. We should like to know what the facts are in this case.

VEGETABLE TALLOW.—The Agricultural Bureau of the Patent Office has received specimens of vegetable tallow, known to botanists as *myristica sebifera*. It comes from a nut about the size of a nutmeg, full of meat, which being melted, becomes a yellowish tallow, excellent for candles. The plant is a native of Central and South America, and naturally attains a hight of 10 or 12 feet; it carries herbaceous flowers from July till September, and makes so profuse a secretion of oily matter that this may be readily obtained from it, in the form of fat, by immersing it in boiling water. H. L. Clarke, Esq., United States Minister at Guatemala, writes that he has no doubt that this article might be collected and exported at considerable profit. It grows in immense quantities in the southern departments and in Verapaz. It is susceptible of such high purification as to resemble the finest sperm, is solid, and quite as transparent. A sample of this production, in the nut and in the tallow, is now among the numerous collections of the Patent Office. The cultivation of it from the seed will be tried at the horticultural garden.

© 1860 SCIENTIFIC AMERICAN, INC.

Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.

Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

☞ See Prospectus on last page. No Traveling Agents employed.

VOL. II., No. 1.....[NEW SERIES.].....*Fifteenth Year.*

NEW YORK, MONDAY, JANUARY 2, 1860.

PROGRESSIVE SCIENCE.

IT is only by comparison that we are enabled to judge of change and progress. When the disk of the sun appears above the eastern horizon and ushers in the light of morning, it seems, from momentary observation, as if he would occupy the same position forever; but when a few hours have passed away, he appears in the mid-heaven, and we know that our position with his has undergone a change. When a sapling oak is planted in spring-time, we cannot detect its growth and progress hour by hour; but, month by month, and year after year, we can perceive it advancing from the shrub of a few feet in hight to the stately "monarch of the forest." As it is with the motions of the planets and the growth of vegetation, so it is with the progress of mankind in any branch of knowledge. By taking a very brief period for examination, we are scarcely able to discover any change in science, philosophy and the arts; a moment for observation is like a grain of sand in forming a mountain—a solitary block in constructing a pyramid. But as we have arrived at the end of another year, and stand on the threshold of a new one, it may not be unprofitable to take a rapid survey of the past.

Great original inventions, like the telegraph, electrotyping and photography, are not numerous; they occur only at considerable intervals of time. During the year that has just gone, we cannot record any great discovery of a new class; but, although this is the case, we well know that some of those inventions which are called "improvements" are more valuable than the leading ideas which suggested them. The steam engine, telegraph, and many other machines, were very crude in their early construction, and were only rendered really serviceable by subsequent improvements. The progress made in such contributions to science and the useful arts during the past year challenges a comparison with any that has preceded it. We opened the new year of 1859 with an illustration, in the SCIENTIFIC AMERICAN, of a sleeping car for railroads, and we specially directed attention to the need of such an improvement for land travel by night. The result has been the adoption of such conveniences on several of our railroads; and passengers in these may repose as soundly while traveling by night as in a Hudson river steamboat. Indeed, a recent English traveler, in describing his experience in America, was enthusiastic in his praises of night traveling on one of our railroads, and asserted that, in this feature, we were far in advance of all nations. The locomotive steam plow also became a practical success in our country last year, and a new era in this branch of agriculture was inaugurated. For saving steam power, by regulating the proper supply according to the work to be performed, however variable, several "cut-offs" under the control of the "governor," have been brought before the public through our columns, and a great economy in fuel has been obtained by such improvements.

Much attention has been devoted to improvements in portable gas apparatus, so as to secure the same advantages to academies, hotels, villages, factories, &c., that are enjoyed in large cities; and our columns afford evidence that great success has attended the efforts of inventors in this direction. In machinery for working in wood, the United States has held the highest position for many years; and our lathes for turning irregular forms, spool-turners, and scroll and molding-cutters, have been adopted in foreign countries. Still, in all such machinery, we are not yet perfect; we are still progressing, for we cannot recollect of any previous year in which so many wood-working machines have been brought before the public through our paper. In agricultural machinery, great advances have also been made; there is scarcely a single operation on the farm, from washing the potatoes to milking the cows and grinding the corn, for which a machine cannot now be obtained. Every department of the useful arts has been enriched by our inventors in 1859, but time and space would fail us to particularize these; there has been no standing still—the march has been onward, the progress manifest.

No better proof could be adduced of progress in the useful arts than the number of patents which have been issued for inventions, as these are only granted upon the conditions embraced in the patent laws, of being "new and useful improvements." We will only take the number of patents whose claims are published entire in our last volume, which covers a period of six months; this being sufficient for our purpose. The whole amount is 1,864, with 41 designs, which will give about 3,810 for the year. The greatest number of patents issued for any one class in the six months is 36 for corn and other seed planters; the next largest number is 32 for sewing machines; the next, 29 for harvesters; and the next 25 for washing machines—showing the ladies have been especially cared for. Agricultural machinery claimed the largest share of the inventors' attention; and this is one of the best signs of progress that could have been presented, because agriculture is the foundation of all the other useful arts. We have made these statements for the encouragement of our inventors. The field of investigation is still wide and inviting; and, from the progress made during the past year, we have every reason to expect that science and art will move on in 1860 with as stately a march as in any past year of the present century.

THE HONORABLE JUDGE MASON AND THE "SCIENTIFIC AMERICAN."

A HIGHLY IMPORTANT ARRANGEMENT.

We find ourselves, on the first of January, 1860, conducting *the most extensive and best arranged agency in the world for the procuration of American and foreign patents.* The confidence of the inventors of this country has become so much concentrated in this office that, in looking over the record of the year past, we find the amount of business transacted by us is unprecedented by any previous year; and we begin the new year with no signs of abatement. To manage successfully so large a business requires an amount of care and experience which few can appreciate, unless they personally visit our establishment. Our determination has ever been to draw around us a force equal to any and every professional emergency that may arise; and we have no doubt that, with the accumulated resources at our command, we could easily transact the entire patent business of the United States.

Our rapidly increasing business demands, at this time, increased facilities for its prosecution; and we are gratified to state to our clients, and to inventors and patentees generally, that the Hon. Judge Mason, of Iowa, the late Commissioner of Patents, has become associated with us, and will enter at once upon his duties at our Home Office, No. 37 Park-row, this city. The advent of Judge Mason will, of course, add very materially to the resources and capabilities of our establishment. His mature and extended experience in patent matters will be of the greatest assistance in the prompt solution of the many questions connected with the preparation of patent documents for inventors, the prosecution of patent cases, &c., that are so constantly brought before us.

AN IMPROMPTU MILL-PICK.—A Kansas correspondent (T. Armore) states that a common sawmill file makes a good mill-pick. He says:—"Take a 10, 12 or 14-inch worn-out sawmill file, grind up its ends, and insert it into some suitable contrivance for holding it secure, and you have a first-rate mill-pick."

OUR PERSONALITY.

In common with most periodicals at this peculiar period of the year, we will be pardoned for saying something about ourself—the SCIENTIFIC AMERICAN—as a personality. But some caviler may say, "What can you say about yourself? You are nothing but paper and printers' ink." Quite true, that is our composition; but is not the human body composed of mere dust? and yet it is a personality, for all that. The spirit breathes, and the mind communicates through us, as its instrument, both thoughts and feelings, and we hold converse with thousands, weekly, as sensibly and truly as if we spoke in audible language. We therefore, in view of these facts, consider ourself a personality; and, like any other intelligent being, we require to be housed, clothed and fed. For the first time in fifteen years, we have commenced a new volume with the opening year, and during the one that has just gone, we have experienced several interesting episodes of life. We have emerged from our old and time-honored dusky habitation, in Fulton-street, to our present spacious apartments in Park-row; but we consider this promotion was no more than we deserved, on account of past faithful services and our increased respectability. We have also been provided with a new suit of apparel—of the best cloth in the market; our dimensions have been expanded to double size, our powers of locomotion have been greatly increased, our circle of acquaintances has been enlarged one-third, and a number of other clever things, "too numerous to mention," have been done for us. In taking a comparative view of our progress during the year 1859, we really feel "considerably elevated" in commencing the "new year," and we enjoy more vigor than ever before, to go on with cheerful heart to labor in our peculiar vocation.

DEATH OF DEQUINCEY.

The Scottish newspapers announce the death of Thos. DeQuincey, in the city of Edinburgh, on the 8th inst., at the age of 73 years. He was one of the ablest essayists of the present age, and was generally known as the author of "Confessions of an English Opium-eater." He was deeply addicted to the use of opium, and gave to the world, many years ago, a series of sketches, in which are detailed the peculiar imaginings of a person under the influence of that pernicious and peculiar drug. He was a native of Manchester, England, but had lived for a number of years in Edinburgh, where he enjoyed the company and gifted conversation of eminent men in that literary city. In person he was small, and had a feeble, withered appearance; but his mind was powerful and his intellect keen; and it is remarkable that, although his health was delicate, and he had swallowed immense quantities of opium, he yet lived beyond the common age of men. His works have all been re-published in America.

CAUSE OF SANDED COTTON.

MESSRS. EDITORS:—I noticed in a late number of the SCIENTIFIC AMERICAN some remarks by you in relation to southern crops. Let me explain to you why there is so much dirty and badly handled cotton sent to our markets. I presume that no cotton planter prefers sending dirt or sand, nor do they try to have it gathered with the cotton any more than possible, for market. Whenever we have large crops, it must necessarily be handled more roughly, or lost to a large amount in the field. We, as planters, blame the commission merchants for so much inferior cotton going into market. If they would make a greater difference in the price between fine and inferior cottons, you would hear no more about dirty or badly handled cotton. Several years ago, many planters went to considerable expense in trying to make fine cotton, but finding that those planters who took no pains whatever in handling their cotton received nearly or quite as good a price, they very soon decided to try for quantity and not take so much time and labor in making fine cotton when it did not pay to do so. The trouble all begins with the commission merchants, in classifying our cotton; they should let each quality sell on its own merits, and not try to make a lot of fine cotton sell an inferior lot. Let the planters see and know that there is a great difference in the price of cotton, and I assure you the market will soon be well supplied with clean, good, and fine cottons. The planters are not going to any extra pains or expense to make fine cotton, when they know that they will not receive much, if any, higher prices than

© 1860 SCIENTIFIC AMERICAN, INC.

those who took no pains. I have been engaged in planting and selling cotton for the last 26 years. These are my views and those of many of the most intelligent planters in Louisiana and Mississippi.

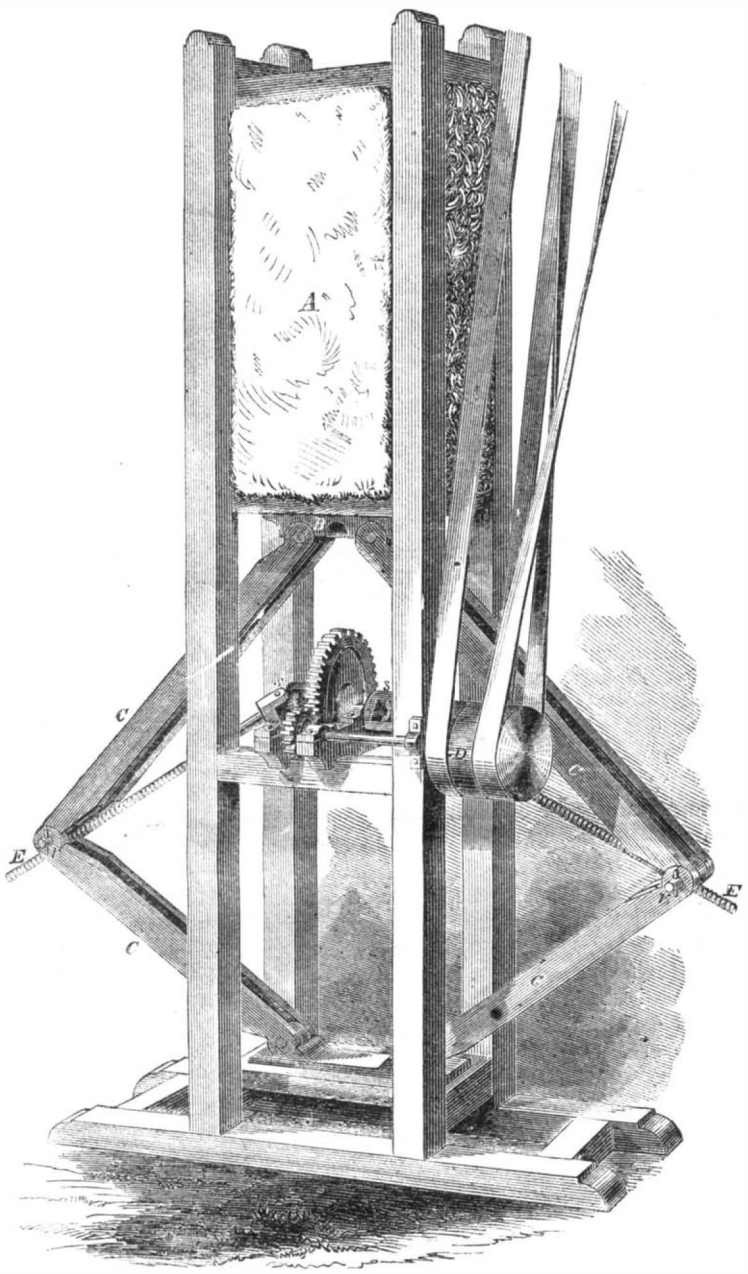
E. J. C.

Centerville, Miss., Dec. 15, 1859.

IMPROVED COTTON PRESS.

For pressing hay, cotton, &c., the most perfect of all plans is the toggle joint, for the power increases with the increase of the resistance; but the difficulty of applying machinery to the continually-moving joint has caused presses of other varieties to be extensively used for these purposes. We here illustrate a device which seems to obviate the difficulty very perfectly.

A is the cotton in the bale box (the box, for clearness, not being represented), B, the follower, and C C C C, the four arms of the toggle, which are made double or in pairs, as shown. The two rods, E E, which draw the joints, *r r*, together, and thus force up the follower, B, pass through nuts at the joints, *r r*, which nuts are fitted to turn in the joints as the inclination of the rods varies with the upward and downward motion of the joints. These rods have one a right hand and the other a left hand screw, and are each made in two parts, which are connected at *s s* by a universal joint. The short arm of each rod is secured in bearings, and carries on its end a pinion, which is connected by gearing to the pulley, D. Two belts run in opposite directions on loose pulleys on the same shaft with, and may be brought upon the pulley, D, alternately to carry the follower up and down, as may be desired. It will be perceived that this is a suitable press for pressing cloth and other substances, as well as cotton.



HAND'S IMPROVED COTTON PRESS.

A patent for this invention was obtained (through the agency of Munn & Co.), on August 16, 1859, for the inventor, M. B. Hand, of Handsboro', Miss.; and persons desiring further information in relation to it will please address Hand & Co., at the above place, or S. C. Hills, No. 12 Platt-street, this city.

AMERICAN INVENTIONS.

We have certainly had some good inventions from America; and, if we were to credit American authority, we might suppose that all we had in the way of useful machinery was invented there. We give proper credit for the cotton gin, Hoe's printing press, the card machine, the Wood-Manny reaping machine, Colt's revolvers, the gun-stock lathes in use at Enfield, and whatever else really good and ingenious we may have taken at the hands of our clever cousins—who, by the way, had much rather be called "smart" than clever. In return for these inventions, we have given the locomotive, the steamship, the power loom, the self-acting mule, the planing machine, the shaping machine, gas-lighting and calico-printing—we have given the Americans the steam hammer, the hydraulic crane, the electrotype process and photography, and we have given them the most important inventions in the iron manufacture, besides showing them the use of iron in ships and bridges. As for the steamboat and electric telegraph, we claim their invention equally with the Americans, and we hold Symington and Wheatstone in as high consideration as an American would accord to Fulton and Morse.—*London Engineer.*

ENGLISH STEAMERS IN THE PACIFIC.

The Pacific Steam Navigation Company (British) are about to place a powerful steam tug in the Bay of Panama, for the lighterage business, and their own purposes. The tug is to be built of steel, 120 feet long and 20 feet wide. She is to have a double engine, side wheels, and will measure 224 tuns, drawing only 3 feet of water when loaded with 50 tuns of cargo and 50 passengers and their luggage, with the usual quantity of specie and mails. She is now being built at Liverpool, and is to be ready in January; but it is not yet determined whether to send her around Cape Horn, or via the Isthmus, in parts, to be put up at Panama.

The Pacific Steam Navigation Company is also building two screw steamers of iron, of about 1,000 tuns register, to be employed on the coast between Panama and Callao, and principally for freighting purposes. They are expected to reach the Pacific during the winter or early in the spring. The regular passenger steamers of the company ply between Panama and Valparaiso, touching at about sixteen intermediate ports. It is high time that our people were looking more closely into this matter, or the English will soon take the entire ocean steam traffic out of their management, and leave us dependent upon them for our mail carriage.

THE SENATE COMMITTEE ON PATENTS.

The following Senators constitute the Committee on Patents, appointed by the present Congress:—Messrs. Bigler of Pennsylvania, Thomson of Kentucky, Hemphill of Texas, Simmons of Rhode Island, and Trumbull of Illinois. On the 22d inst., Senator Mallory, of Florida, introduced a bill "to promote the progress of the useful arts," or, in other words, a bill to amend the Patent Laws. It affords us much gratification to record this fact as proceeding from a Senator whose constituents are but little engaged in manufacturing. It shows an appreciation, on his part, of the need of some reform in a system which has received from Congress, for more than twenty years, nothing but "the cold shoulder." We believe also that Senator Bigler will appreciate the importance of doing something with this matter. His constituents are among those most interested in patent law reform.

THEORY OF THE CONSTITUTION OF STEEL.

Unsatisfied with the common theory of steel being made with a combination of carbon and iron, Mr. J. Saunderson, an English manufacturer of this metal, has instituted some experiments with the following results:—

1st. Wrought-iron heated in presence of carbon is not converted into steel.

2d. The transformation takes place when atmospheric air has access.

3d. Pure carbonic oxyd is without action.

4th. Ammonia or nitrate of ammonia are incapable of steeling iron.

5th. It is the same with the divers hydro-carbons employed pure.

6th. But the iron is steeled when we apply, at the same time, ammonia and olefiant gas.

7th. The transformation can be effected by pure ammonia or sal ammoniac when a carbureted iron is employed.

8th. Potassium or its vapor produces nothing, but steel is produeed when ferrocyanide of potassium is used.

9th. Pure cyanide of potassium succeeds as well as the ferrocyanide; this proves that the active principle does not reside in the iron of the ferrocyanide, from which Mr. Saunderson concludes that the transformation does not take place, except with the condition of a simultaneous occurrence of carbon and nitrogen.

He adds that nitrogen is always found where iron passes into the state of steel, that it is so even in cementation that the vessels are not sufficienily tight to exclude the air, and consequently nitrogen which it contains. He recalls, on this occasion, the part played by the clippings of hides, shavings of horn and animal charcoal, which are frequently employed in the manufacture of steel. It is not obtained by dipping red-hot iron in pure olive oil, but is produced with fat—precisely because the latter is azotised, thanks to the animal membrane which it contains—whilst olive oil is free from nitrogen.

WAX AND ROSIN FOR PAINTING.—To oil coats there is this objection, that they require a comparatively long time to dry. When oil of turpentine is used, though it evaporates fast enough, it leaves the painting soft; and although, by the addition of some other substances, the drying may be hastened, it even then takes up too much time, and leads to the substitution of whitewash and other water colors. Mr. Alluys now proposes a mixture which yields a coat of paint that will dry as fast as whitewash, but leave as durable and elastic a coat as that of oil. To prepare it, instead of more linseed oil, as usually, he adds to the paint, ground in oil, a solution of wax and rosin in spirits of turpentine. The mixture thus prepared has the appearance of common oil paint, and acts like such. On the evaporation of turpentine, it leaves a coat sufficiently hard to bear gentle rubbing without coming off. Barreswil has reported some experiments with this mixture, and finds that, although it becomes sufficiently dry and hard after a time, it does not equal a good oil coating in this respect; but he has no doubt that, for some purposes, it will be found quite desirable. He gives the following formula for its preparation: 10 parts of pure yellow wax are dissolved in the same quantity of linseed oil, and 5 parts of rosin in 8 of spirits of turpentine, at a slow heat (in separate vessels) until quite liquid; when they are taken from the fire and mixed, with constant stirring, until they thicken. In this condition, the mixture serves for out-door and store-work. If to be applied with ground paints, it is thinned with spirits of turpentine, as required.—*Dingler's Polytechnic Journal.*

© 1860 SCIENTIFIC AMERICAN, INC.

WONDERFUL NEW INLAND SEA IN LOWER CALIFORNIA.

The following is taken from the *Alta Californian*, and looks to us as if colored with the rose water of the "Arabian Night's Entertainments." We however, give it for what it is worth:—

It is not generally known that a great *laguna*, or as it termed, an "inland sea," exists in Lower California. Though a few natives and Indians have always been aware of the fact, it evidently is unknown to geographers, for in no published maps, from the earliest period down to the present time, is any such body of water laid down. That the lake exists there can be no question, as is evidenced by whaling captains now in port. In length it reaches from latitude 26° 40′ to 28° 4′, or something less than one hundred miles, and in width extends from 40 to 50 miles, giving it an irregular shape. One of our informants, Mr. Selim E. Woodworth, who has recently returned from that locality, gives us some interesting details of this lake or bay. This body of water was first "discovered" for all practical purposes, by Capt. Scammon, of the whaling ship, *Ocean Bird*, of this port, who entered it three years ago, and quickly filled up his ship there. He found the waters of this "sea," as he terms it, abounding in whales, the females resorting thither between December and April to calve. He kept the discovery a secret, and on the following season went there again, returning with the same success, and exciting the wonder of his compeers in the whaling business at his unaccountable luck. At last his mate, who had a brother commanding a whaler in the northern seas, wrote to the latter at the Sandwich Islands, informing him of the fact, and the news thus getting abroad, eighteen whalers came over from Honolulu last season, and some succeeded in effecting an entrance. Others were unable to do so, owing to the intricacy of the channel. Ship *Black Warrior* was lost in the attempt; and after that, part of the fleet, getting scared at the place, left, and never returned. Those that entered, however, last season, got well repaid for their enterprise, and the *Ocean Bird*, particularly, made another good thing out of it. The news is now thoroughly circulated among the whalers at Honolulu, and in a short time there will be over fifty vessels on the way there. The entrance is between low sandpits, not more than a thousand yards apart. From this the lake opens at once, and presents a broad and fine-looking expanse of water. It abounds in seal and whale. Our informant, in speaking of the latter, remarked that "the place is alive with them." It is not likely that they will prove so abundant after the approaching whaling fleet has killed off the cow whales, or driven them away from their ancient haunts. The Mexican government, quick to profit by the enterprise of others, have already established an agent there, who exacts tunnage dues from all vessels entering for whaling purposes. The waters being generally smooth, the fisheries are pursued with ease and success.

Several islands containing a vast amount of guano are also found there, and there are large deposits of pure salt.

A VALUABLE TESTIMONIAL.

GENTLEMEN:—During the past three months I have employed you to prepare and prosecute six applications for patents, and I take pleasure in stating that all these cases were granted without any essential alteration in the papers. In all my experience as an inventor, which covers a space of twenty-five years (my first patent was granted in 1834), I have never had applications so thoroughly and so satisfactorily prepared. Any one contemplating to procure patents has but to visit your immense establishment, and watch the complete system which governs it throughout—as I have done from day to day—to be satisfied that it is *the* place, above all others, to apply for information and professional aid in all matters pertaining to Letters Patent for inventions. Tendering to you and your efficient corps of examiners my thanks for the courtesy and fidelity shown to me and to my business, I am, gentlemen,

Your obliged friend,

JOHN WEBSTER COCHRAN.

New York, Dec 20, 1859.

[Mr Cochran is a veteran inventor, and has probably patented as many inventions as any other man now living. His testimonial, therefore, is based upon the result of an extended experience.—EDS.

THE GREAT EASTERN.

The Great Ship Company, who own the steamship *Great Eastern*, have caused her to be thoroughly examined by experts (no doubt of the highest position) who have made the following brief but weighty report:—

"Great Eastern Steamship, Holyhead, Oct. 18.

"GENTLEMEN:—In compliance with your request, we have made a complete survey of the *Great Eastern*, but, not having had time to prepare our detailed report, we beg to submit the following remarks upon the points referred to in your letter, and some others which we think important you should bring under the consideration of the Board:

"With reference to the intimation that Mr. Russell alleges that his contract is completed, we mark that the hull of the ship to which our survey has been specially directed (exclusive of the engines) is not completed either as to the 'general scope' or the 'details of the contract,' as a first-class passenger ship, such as those of Cunard's line or the Royal West India Mail Company, and that, in her present state, it would be imprudent to send her to sea on a lengthened voyage.

"We are unable at present to arrive at a definite opinion as to the cost of the works necessary for the completion of the ship in all respects in accordance with the contract. The amount must be very large. We are unable to state the amount of damages consequent on the delay in sending her to sea.

"We may remark generally, that, with the exception of a few cabins, the accommodations are by no means equal to the requirements of a first-class passenger steamer, such as Cunard's line or the Royal West India Mail steamers, but are very inferior—materials, workmanship and furniture.

"The accommodation for the officers and crew is by no means such as ought to have been provided and is required by the contract.

"The decks are not tight, and a great deal of inferior material and workmanship has been used in them.

"There is no heating apparatus for warming the cabins in winter.

"There is a considerable amount of work which is absolutely necessary to be performed before the ship can be trusted on a lengthened voyage across the Atlantic, which work would require a considerable time to execute in an efficient manner, and even with this alone the ship would not be what the contract requires her to be; and deficiencies in other respects would be a constant source of expense and annoyance to the company.

"We are, gentlemen, your obedient servants,

"GEORGE BAYLEY.
"WILLIAM PATTERSON.
"JOHN JORDAN."

THE NEW YANKEE SWINDLE.—Certain swindlers in America, on seeing announcements in the papers of the death of wealthy individuals in England, have lately adopted the artful plan of addressing letters to the deceased parties, which letters have been so written as to induce the executors to believe that the writers were on intimate terms with those whom they addressed, and that they still believed they were living. They invariably alluded to the promises of the deceased to make remittances, and concluded with urging them to do so without delay. The executors, presuming that all was correct, as stated, have in many instances made the remittances; but the recent exposure of the swindlers has had the effect of thwarting their nefarious designs.

We copy the above from an English journal, and are rejoiced to know that the "nefarious designs" of Yankee swindlers are exposed and thwarted; but what can be said of those executors who presumed all was correct, and actually remitted? Such verdancy is truly lamentable, and ought to receive the attention of the proper authorities. If such swindles have been perpetrated (which we can scarcely believe), we venture to state that the Yankees were born in England, and knew the susceptibilities of those whom they addressed.

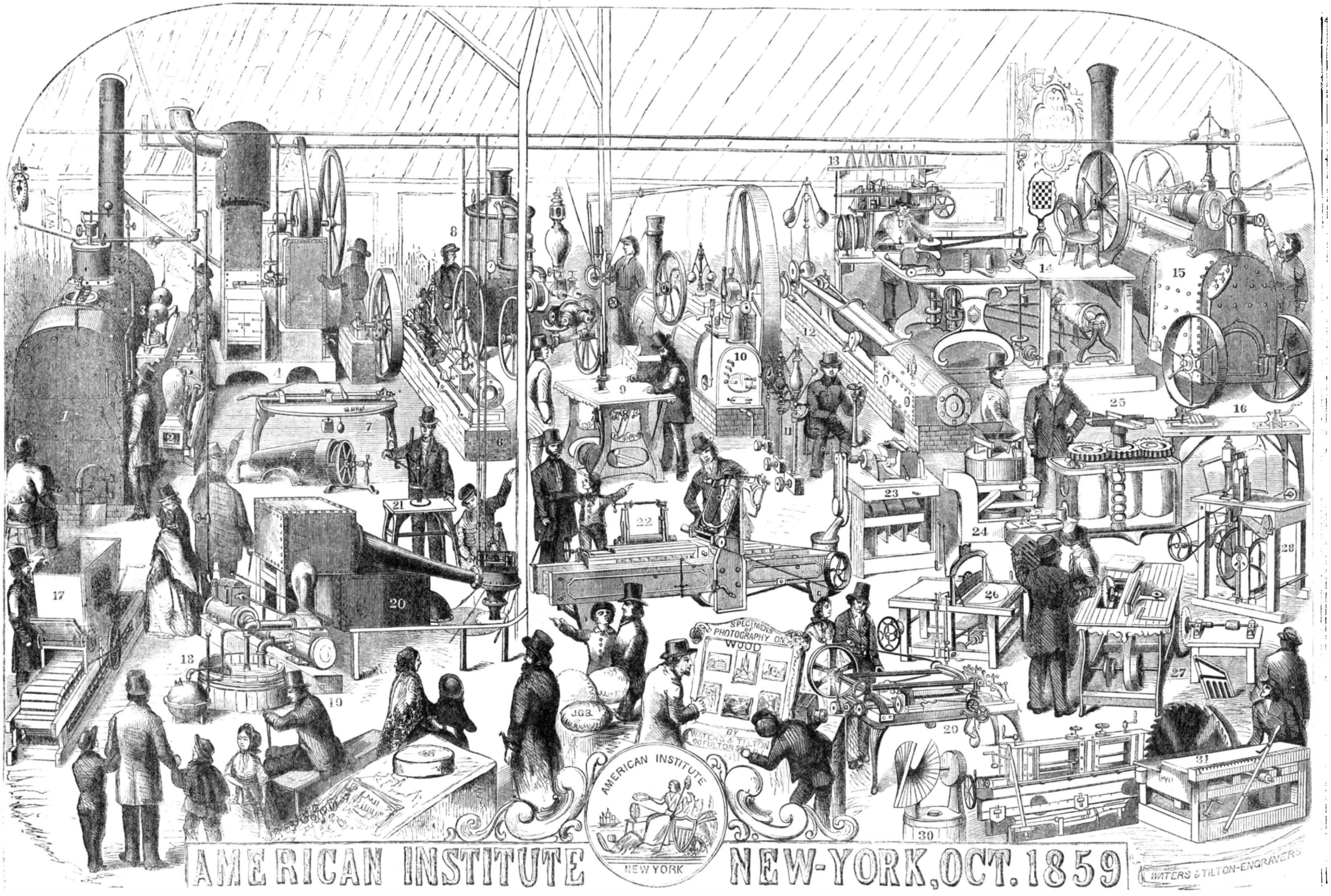
TO THE RIGHT!—M. Babinet, of the Paris Observatory, has advanced before the Academy of Sciences the singular proposition that in all rivers left to themselves, it is invariably the right bank that is washed by floods—that is to say, it is the right bank which suffers the most friction and the most destruction. He explains this by the direction and force of the earth's rotation. His contradictors at the Academy admit that this may be true of rivers running north and south, but they deny the principle for those which run east and west, in the direction of the earth's rotation. M. Babinet contends that even here the friction of the right bank is slightly greater than that of the left. Will some American professor take the trouble to reply to the French astronomer's proposition? For it is especially in America that it can be proved or disproved by actual observation.—*Paris Cor. of the New York Times.*

All nonsense! Our American rivers abraid their banks on both sides, right and left, according to the direction of the current from the hard or soft nature of the banks.

A COLUMN OF VARIETIES.

Since the brilliant display of falling stars between the 12th and 13th of November, 1833, it has been observed that this phenomenon is much more likely to be seen at that time of the year than at any other; and one learned astronomer, Olbers, has come to the conclusion that it is probable that the next great display will take place between the 12th and 13th of November, 1867.....Sir William Herschel was of opinion that light required 2,000,000 years to reach the earth from the most remote luminous vapor visible through his 40-foot telescope. A locomotive running at the rate of 20 miles an hour, constantly, day and night, would occupy more than 500 years in passing from the the earth to sun; but light passes from the sun to the earth in 8 minutes.....In Lima (Peru) slight shocks of earthquakes average 45 per year.....A company has been formed in Haddam, Conn., for the purpose of manufacturing patent pocket umbrellas. This useful article will no longer be *public* property.....At a railroad station, an old lady said to a very pompous looking gentleman, who was talking about steam communication: "Pray, sir, what is steam?" "Steam, ma'am, is, ah—steam is, ah—ah! steam is—steam!" "I knew that chap couldn't tell ye," said a rough-looking fellow standing by; "but steam is a bucket of water in a tremendous perspiration."......The Victoria tubular bridge at Montreal, two miles in length, is a fixed fact. The first locomotive crossed over it on Nov. 24th, and it was opened for regular travel on Dec. 18th. The engineer is A. M. Ross, and the builder J. Hodges. Its entire cost is $6,500,000. There are 24 piers, composed of 3,000,000 blocks of solid masonry. The total weight of the tubes, which are all iron, is 8,000 tuns. The shipping pass under them. This is the last link in the Grand Trunk Railroad, 1,000 miles long and in running order, the longest continuous line in the world..... It is estimated that the number of human beings on the earth is, 1,000 millions, of whom about 33 millions die every year, 91 thousand per day, 3,800 per hour, and 63 every minute. As the number of births is equal to that of the deaths, children are born into the world at the rate of one a second; consequently, reader, since you began this paragraph, several human souls have commenced their immortal career!.... .It is said that there are not less than 8,064 languages spoken in the world .....There are more than 1,000 different religious beliefs prevailing among the children of men.....Many of the carriages running upon the Paris and Versailles and upon the Paris and Vincennes railroads are two stories in hight, having covered seats upon the roofs.....The French Government has ordained the systematic gathering of the sea-weed which is washed on the rocks of the coasts of Normandy and Brittany, to serve as wadding for artillery.....A most valuable discovery of diamonds has recently been made at the foot of the Ural Mountains, Russia. One specimen brought the lucky owner $60,000. There is every reason to believe that a mine of inexhaustible wealth has been discovered.....At the Philadelphia Mint, in November, 3,300,000 of the nickel cent were coined. The Mint receives the Spanish coin in exchange for cents at rates which afford a large gain to the former.....The first mill in Manayunk, Philadelphia, was erected about 40 years ago. Manayunk is now called the "Lowell of Pennsylvania," having more manufactories than any other town of its size in the State.....The Amsterdam Crystal Palace is to be completed and opened in the year 1861. It will be 400 feet in length, by 200 feet in width, and the central dome will be 200 feet in hight, at the junction of which will be a transept and a nave of the edifice. The structure is to be of iron and glass; but, as Holland is not famous for iron, it will be supplied by England.....It is stated that the Pacific Steam Navigation Company (British) will soon place a steam tug in the Bay of Panama, to be employed in lighterage business generally, as well as for their own purposes. The tug is to be built of steel, 120 feet long and 20 feet wide. She is to have a double engine, side wheels, and will measure 224 tuns, drawing only three feet of water when loaded with 50 tuns of cargo and 50 passengers and their luggage with the usual quantity of specie and mails. She is now being built at Liverpool, and is to be ready in January; but it is not yet determined whether to send her around Cape Horn, or *via* the Isthmus, in parts, to be put up at Panama..... The largest shell guns in our navy have a bore of eleven inches.

© 1860 SCIENTIFIC AMERICAN, INC.



© 1860 SCIENTIFIC AMERICAN, INC.

MACHINERY DEPARTMENT OF THE LATE FAIR OF THE AMERICAN INSTITUTE.

We present to our readers, this week, a large engraving illustrating the Machinery Department of the recent fair of the American Institute. This portion of the exhibition, as well as the other portions, was less extensive than in some former years; but in no previous year has so large a proportion of the exhibited improvements been of a rational and valuable character, affording one among many gratifying evidences of the rapidity with which a knowledge of sound mechanical principles is being disseminated in the community. Our engraving does not include all the machines which were exhibited, but it embraces the principal portion; and it gives a good idea of their arrangement, and of the general appearance of this department of the fair.

Beginning on the extreme left, No. 1 is the large boiler furnished by the managers of the Institute to supply steam to those engines which were exhibited in operation. The steam pipes leading from this boiler to the several engines, as well as the line of shafting and belts by which the machines were driven, are omitted, in order to avoid the obscurity which they would cause in the view.

2. *Woodward's Steam Pump;* exhibited by C. & G. M. Woodward, No. 77 Beekman-street, this city.

3. *A Fire Regulator;* for regulating the fire in steam boiler furnaces by the pressure of the steam. It operates by opening and closing dampers.

4. *Prosser's Condenser;* exhibited by Thomas Prosser & Son, No. 28 Platt-street, this city. The main object in exhibiting this condenser was "to show, by occular demonstration, that the great desideratum of a recuperative supply of distilled water, to make up for the waste water from the boiler, is actually accomplished." This condenser received a silver medal.

5. *Marshall's Blower;* exhibited by C. P. Marshall, of Fitchburg, Mass. This blower is designed for smelting furnaces, blacksmith shops, factories, ventilation, or any other purpose where a blast or draft is required. It consists in a series of spiral fans and stationary partitions, and is said to produce a very strong and steady blast.

6. *Schultz's Patent Steam Engine;* exhibited by C. A. Schultz, Neptune Iron-works, foot of Eighth-street, East river, this city. It was illustrated and described on page 201, Vol. I. (new series), SCIENTIFIC AMERICAN. It received a large silver medal.

7. *Waymoth's Wood-turner;* exhibited by A. D. Waymoth, of Fitchburg, Mass. This is briefly described on page 301 of our last volume. Having received a silver medal at a previous exhibition, a diploma only was awarded.

8. *A Steam Fire Engine with Cary's Rotary Pump;* exhibited by J. C. Cary, 240 Broadway, this city. It was awarded a gold medal, and is the best steam fire engine which has ever come to our notice.

9. *Wright's Scroll Saw;* exhibited by Lysander Wright, of Newark, N. J. There is an elaborate description of this saw on page 353, Vol. XI., SCIENTIFIC AMERICAN. It is a good invention.

10. *Hoadley's Portable Steam Engine;* exhibited by J. C. Hoadley, of Lawrence, Mass. This engine was described in our notices of the fair, on page 258, Vol. I (new series). It received a large gold medal.

11. *Porter's Governor;* exhibited by Charles T. Porter, No. 235 West Thirteenth-street, this city. This exceedingly prompt and sensitive governor was fully illustrated and described on page 36, Vol. XIV., SCIENTIFIC AMERICAN. It received a silver medal.

12. *Reynold's Engine;* exhibited by H. A. Reynolds, of the Novelty Works, this city. This engine is described in our notices of the fair, on page 274, last volume. It was awarded a diploma, having previously received a gold medal.

13. *Schott's Knitting Machine;* exhibited by Fred. Schott, Dean-street, near Grand-avenue, Brooklyn, N. Y.

14. *The Variety Molding Machine;* exhibited by S. M. Hamilton, of Baltimore, Md. This remarkable machine was illustrated and fully described on page 329, Vol. I. (new series), SCIENTIFIC AMERICAN. It received a large gold medal.

15. *Fishkill Landing Company's Portable Steam Engine;* exhibited by the above company. This engine was described in our notices of the fair, on page 258, Vol. I (new series). This company has an agency in this city; and therefore, for further information, address Fishkill Landing Company, at Fishkill, N. Y.

16. *Crosby's Blind Lath and Rod-wiring Machine,* for inserting the little wire staples into the slats and rods of window blinds; and *S. W. Hill's Miter Machine;* both exhibited by Ransom Crosby, 358 Broad-street, Newark, N. J.

17. *Allen's Brick Machine;* exhibited by Lynch & Duren, No. 4 Erie Buildings, this city. It would require other diagrams to make this machine intelligible; and therefore persons desiring further information are advised to correspond with the agents.

18. *Jenkins & Polley's Steam Trap;* exhibited by E. T. Jenkins, No. 6 North Second-street, Williamsburgh. This is a simple little device for removing the condensed water in steam pipes used for heating buildings. A useful invention.

19. *Holmes & Foster's Steam Pump;* exhibited by Dr. Holmes, corner of South Eighth and Sixth-streets, Williamsburgh. It is particularly adapted to supplying steam boilers with water, though it is also claimed to be a superior pump for raising hot or cold molasses or sirup.

20. *Andrews' Rotary Pump;* exhibited by W. D. Andrews, 414 Water-street, this city. This pump raises the water by centrifugal force, and has been noticed before in our columns. It was awarded a large gold medal.

21. *Burroughs' Corking Machine;* exhibited by S. A. Heath & Co., Inventors' Exchange, No. 37 Park-row, this city. The corks are forced through conical steel thimbles into the necks of the bottles. This machine received a diploma.

22. *Woods' Planing Machine;* exhibited by Gray & Woods, Boston, Mass. This is a combination of the Woodworth and Daniels' planers in one machine. A full description with a more elaborate illustration of this invention will soon appear in the SCIENTIFIC AMERICAN. It was awarded a silver medal.

23. *Sanford's Excelsior Mill;* exhibited by J. A. Bennet, 45 Gold-street, this city. It is a conical burr stone mill for grinding grain; and the agent will be happy to enlighten any person on the special merits of the mill, by being addressed as above.

24. *Wagoner's Rice-hulling Machine;* exhibited by S. A. Heath & Co., No. 37 Park-row, this city. A large bronze medal was awarded to it.

25. *Stanton & Co.'s Sugar Mill;* exhibited by I. Stanton & Co., Newburgh, N. Y. These mills are made wholly of metal, both with horizontal and vertical rollers, which are adjustable to give the cane any pressure desired.

26. *Burroughs' Paper Cutter;* exhibited by S. A. Heath & Co., No. 37 Park-row, this city. This machine was described and illustrated on page 233, Vol. I. (new series), SCIENTIFIC AMERICAN. It received a silver medal.

27. *Tidy's Grooving Saw;* exhibited by M. B. Tidey, of Newark, N. J. This is a stiff circular saw, set diagonally to the axle, for sawing grooves in boards or timber. It makes handsome work.

28. *Kaefer's Mode of Transmitting Motion;* exhibited by the Kaefer Power Company, whose office is in room No. 26 of the large building of the Harlem Railroad Company, corner of Center and White-streets, this city. This device was fully described and illustrated on page 240, Vol. I. (new series), SCIENTIFIC AMERICAN. It received a large silver medal.

29. *Hunton's Spiral Cutter;* exhibited by William M. Cassidy, of Albany, N. Y. A brief description of this machine will be found on page 301, Vol. I. (new series), SCIENTIFIC AMERICAN. Jonathan Hanson, of Harlem, has purchased the patent right for New York, and is now, we understand, operating a machine.

30. *Benson's Wind and Water Wheel;* exhibited by S. A. Heath & Co., No. 37 Park-row, this city. This machine was fully described and illustrated on page 136, Vol. I. (new series), SCIENTIFIC AMERICAN. A diploma was awarded.

31. *Parkhurst's Combination Timber, Board, Shingle, Lath, Clapboard and Siding Mill;* exhibited by B. E. Parkhurst, of this city. A large silver medal was awarded to this machine.

The Machinery Department of the fair was under the charge of S. W. Turrell (of the firm of S. W. Turrell & Co., 215 Center-street, this city), whose ability and energy in this capacity secured the unanimous approval of the exhibitors, as well as of the managers.

Our engraving was executed by Waters & Tilton, No. 90 Fulton-street, this city, patentees of the process for taking photographs of the objects to be represented directly on the blocks to be engraved, which greatly reduces the time and expense of preparing the drawings for the engraver.

ROTTEN STONE.

This is a useful yellow colored substance much employed in scouring brass and tin by mixture with a little sweet oil, then finishing off with some dry whiting. Very few persons know where it comes from, or of what it is composed. According to Professor Johnstone, it is composed of silica, alumina and carbon. It is obtained from a ridge in Derbyshire, England, which is covered with drift 10 or 20 feet thick, consisting of brown clay, with manes of black marble, chert and rotten stone. The rotten stone is so soft whilst in the soil that the spade goes through it readily, but it hardens on exposure. The holes from which it is dug are only two feet deep in some places; at others, from six to eight. On examining a series of specimens, Professor Johnstone found that, while some were homogeneous, others had a nucleus of black marble. He then treated specimens of the black marble with weak acid, and found that on the removal of the carbonate of lime, there remained from 15 to 20 per cent of a silicious substance perfectly like the natural rotten stone. He concluded that there existed in the soil some acid which penetrated it and dissolved out the calcarious matter of the rocks below. The agent in this case might be the carbonic acid of the air, brought down by rain; but there were instances not capable of explanation by this agency alone, and attributable to other acids, which are produced under certain conditions, and exercise a much wider influence. The bottoms of peat bogs present very strong evidence of the action of acids; the stone and clay are bleached and corroded, only silicious and colorless materials being left. The source of the acid is here the same as in the former instance; the vegetable matter growing on the surface produces in its decay substances which exert a chemical action on the subsoil, and escape by subterranean outlets, carrying away the materials dissolved in their progress. Another instance was afforded by the mineral Pigotite, formed in the caves of Cornwall by water dripping from the roof. This water contains a peculiar organic acid, derived from the soil of the moors, which dissolves the alumina of the granite and combines with it. The organic acids are very numerous and different in composition, but agree in producing chemical action upon rocks. They are produced over the entire surface of the earth, especially over uncultivated tracts, and are the means provided by nature to dissolve the mineral food of plants; they are also amongst the chief causes of the exhaustion of soils. In the green sandstone strata of Surrey, England, known as "firestone," the rock is light and porous, and contains silica in a soluble state. Common sandstone quartz or rock crystal are not acted upon by potash or soda at ordinary temperatures, but 30 per cent. and sometimes 70 per cent of the silica in "firestone" may be dissolved. In all such cases the silica must have been originally in a state of chemical combination with lime, alumina, or something else, which has been subsequently removed. The silica in the rotten stone was soluble, but black marble, in a bedded state, never was found converted into rotten stone.

PLANTS PRESERVED FROM COLD BY ICE.—To preserve plants from the frost, it suffices to surround them with some vessels of water. The latter will freeze, and in the act of passing into the solid state set free a quantity of caloric sufficient to prevent the temperature of neighboring objects from falling below the freezing point. Water while freezing gives up 75 to 80 per cent of heat, and this is the secret of Lecop's system. Of course, no draft must be allowed to interfere.

GOOD INVENTIONS PAY.—Messrs Pierce & Beardsley, of Castle Grove, Iowa, obtained a patent, through our agency, Oct. 4, 1859, for an improvement in tanning with cold liquors. One of the parties writes to us as follows:—"I noticed in your paper an account of some big sales made of patent rights. I think that we have done pretty well. Our sales have amounted to about $14,000, and we have not sold much territory. I sold about one-third the State of Missouri for $5,000." We rejoice heartily to hear of their good fortune.

© 1860 SCIENTIFIC AMERICAN, INC.

FOREIGN NEWS AND MARKETS.

Experiments have been made in testing the plates of the steamer *Royal Charter*, which was recently wrecked, in order to discover their strength, as it was stated they were of very inferior iron, being what are called "boat plates." The experiments have resulted in proving the metal of the plates to be good—far above the average strength. One plate of two inches long, by eleven-sixteenths of an inch broke with 32 tuns; and the average strength of five plates tested was 20 tuns to the fifty-five-hundredth of an inch in thickness, or a little over 36 tuns to the inch. The sudden breaking to pieces of this vessel cannot be attributed to the metal plates, as has been reported. A new field of inquiry is here opened in regard to the defective points of construction in iron ships; there is much ignorance prevalent on this subject.

Mr. I. Trotman inventor of the best anchor ever used in England, states, in a letter to the London *Times*, that the cables of the *Royal Charter* cost only 13*s* 6*d* ($3 27) per cwt., while the best cables cost nearly double that amount. This is an important fact; we again warn our shipowners to look to their English cables, as Mr. Trotman asserts that scarcely 1 per cent of the anchors and cables now sold in England to the mercantile marine would pass muster at the naval dockyards. While the war was going on in the Crimea, a great number of merchant ships were wrecked in the Black Sea during a severe hurricane, by their anchors giving way, while not a single war vessel was lost; all the cables and anchors of the latter stood this practical test thoroughly.

We think an effort has been made in England to depreciate the character of Burden's American machine for making horse and mule shoes. The company (at Wolverhampton) which own the machine sued F. F. Stewart for the price of a large lot of mule shoes manufactured for South America, on contract. The payment was refused on the ground that the metal of the shoes was defective, and the work very inferior; neither the grooves nor holes were cut clear. Out of 600 pairs examined scarcely one was fit for wear. This was admitted, but it was stated that the price was so low that no better work nor metal could be afforded. They should not have taken a contract to damage the character of their machinery.

In France most of the gate-keepers on the railroads are females, and ladies are also employed in most of the station ticket-offices. A commission appointed to examine into their efficiency for such situations, in comparison with men, have made a favorable report.

Upon all the railroads of Great Britain there are now employed 110,000 persons. Some very large coal-burning locomotives are being made at the works of Stevenson & Co., Newcastle, England, for the Great Northern Railroad. Their driving wheels are no less than 7½ feet in diameter, and their inclined grates 6 feet long.

The *Orinoco*, a steamship belonging to the West India Royal Mail Co., built of wood in 1852, and of 4,500 tuns burden, is about to be broken up in London, her engines taken out and placed in a new iron hull. She has become completely rotten in eight years.

There has been a great increase in the amount of wrought iron shipped to the United States this year. The statistics lately published for the month of October place the value of the amount at $450,000—double that for the same month last year.

The value of English cutlery exported to America during the same month, was 20 per cent more than for the same period in 1858. The value of pig iron sent to the United States in October last year was only £2,133; for the same month this year it was £4,163—nearly double.

The price of English bar and bolt iron in Liverpool, per tun is £6 10*s*; Staffordshire bars £7 10*s* for shipping; Welsh rails on six months credit, £6 15*s*; Scotch pig iron (No. 1), £2 13*s*; spelter £21 10*s*. Copper sheathing and cakes, £112. Block tin £135 best; Banca £134; tin plates from £1 10*s*; to £1 16*s* per box.

Scotch pig iron is active and has somewhat advanced in price. Rails are steady but not active. An advance of one cent per lb. has been made in copper; tin, both in bars and plates, has an upward tendancy. The English metal market on the whole is in a very favorable condition.

NEW YORK MARKETS.

CANDLES.—Sperm, city, 38c. a 40c. per lb.; sperm, patent, 50c.; wax, paraffine, 50c.; adamantine, city, 18c. a 21c.; stearic, 27 a 28c.

COAL.—Anthracite, $4.50; Liverpool orrel, $11; cannel, $12.

COPPER.—Refined ingots, 23c. per lb.; sheathing, 26c.; Taunton yellow metal, 20c.

CORDAGE.—Manilla, American made, 8¼c. per lb.; Rope, Russia hemp, 12c.

COTTON.—Ordinary, 8½c. a 8¾c.; good ordinary, 9½c. a 10c.; middling, 11½c. a 11⅝c.; good middling, 11½c. a 12½c.; middling fair, 11⅞c. a 12¾c.

DOMESTIC GOODS.—Shirtings brown, 30 inch per yard, 6c. a 7¼c.; shirtings, bleached, 26 a 32 inch per yard, 6c. a 8c.; shirtings, bleached, 30 a 34 inch per yard, 7c. a 8¼c.; sheetings, brown, 36 a 37 inch per yard 5½c. a 8¾c.; sheetings bleached, 36 inch per yard, 7½c. a 15c.; calicoes, 6c. a 11c.; drillings, bleached, 30 inch per yard 8¼c. a 10c.; cloths, all wool, $1.50 a $2.50; cloths, cotton warp, 85c. a $1.37; cassimeres, 85c. a $1.37½; satinets, 30c. a 60c.; flannels, 15c. a 30c.; Canton flannels, brown, 8½c. a 14c.

DYEWOODS.—Per tun, Barwood, $18 a $20; Camwood, $130; Fustic, Cuba, $35 a $36; Fustic, Tampico $22 Fustic, Savanilla, $19 a $20; Fustic, Maracaibo, $18.50 a $19; Logwood, Laguana, $22 a $23; Logwood, Tabasco, $21; Logwood, St. Domingo, $13 a $13.50; Logwood, Honduras, $16 a $17; Logwood, Jamaica, $12.50 a $13, Lima wood, $65 a $75; Sapan wood, $45.

FLOUR.—State, superfine brands, $5 a $5.05; Ohio, common brands, $5.20 a $5.25; Michigan, Indiana, Wisconsin, &c., $5.15 a $5.30; Genesee, extra brands, $5.70 a $7.50; Missouri, $5.25 a $7.50; Canada, $5.50 a $6.60; Richmond City, $6.50 a $7.25; Rye flour, fine, $3.60 a $3.90; corn meal, $3.75.

HEMP.—American undressed, $120 a $150; dressed, from $160 a $200. Jute, $87 a $90. Italian, $275. Russian clean, $190 a $200 per tun. Manilla, 6¼c. per lb. Sisal, 5½c.

INDIA-RUBBER.—Para, fine, 60c. per lb.; East India, 50c.

INDIGO.—Bengal, $1 a $1.55 per lb.; Madras, 70c. a 95c.; Manilla, 60c. a $1.15; Guatemala, $1 a $1.25.

IRON.—Pig, Scotch, per tun, $23.50 a $24; Bar, Swedes, ordinary sizes, $87 $90; Bar, English, common, $42.50 a $43; Refined, $53 a $54; Sheet, Russia, 1st quality, per lb., 11¼c. a 11½c.; Sheet, English, single, double and treble, 3½c. a 3⅞c.; Anthracite pig, $24 per tun.

IVORY—Per lb., $1.25 a $1.80.

LATHS.—Eastern, per M., $2.25.

LEAD.—Galena, $5.80 per 100 lbs.; German and English refined, $5.05; bar, sheet and pipe, 5¾c. a 6c. per lb.

LEATHER.—Oak slaughter, light, 29c. a 30c. per lb.; Oak, medium, 30c. a 32c.; Oak, heavy, 28c. a 31c.; Oak, Ohio 29c. a 30c.; Hemlock, heavy, California, 19c. a 20c.; Hemlock, buff, 15c. a 18c.; Cordovan, 50c. a 60c.; Morocco, per dozen, $18 to $20.; Patent enameled, 16c. a 17c. per foot, light Sheep, morocco finish, $7.50 a $8.50 per dozen.; Calf-skins, oak, 57c. a 60c.; Hemlock, 56c. a 60c.; Belting, oak, 32c. a 34c.; Hemlock, 28c. a 31c

LIME.—Rockland, 80c. per bbl

LUMBER.—Timber, white pine, per M feet, $17.50; yellow pine, $35 a $36; oak, $18 a $28; eastern pine and spruce, $14 a $15½; White Pine, clear, $35 a $40; White Pine, select, $25a,$30; White Pine, box, $14 a $18; White Pine, flooring, 1¼ inch dressed, tongued and grooved, $24.50 a $25; Yellow Pine, flooring, 1¼ inch, dressed, tongued and grooved, $29 a $32; White Pine, Albany boards, dressed, tongued and grooved, $30 a $21; Black Walnut, good, $45; Black Walnut, 2d quality, $30; Cherry, good, $45; White Wood, chair plank, $42; White Wood, 1 inch, $23 a $25; Spruce Flooring, 1¼ inch, dressed, tongued and grooved, each, 22c.a 24c.; Spruce Boards, [illegible] a 17c.; Hemlock Boards, 12½c. a 14c.; Hemlock wall strips, 10c. a 11c.; Shingles, cedar, per M, $28 a $35; Shingles, cypress, $12 a $25; Staves, W. O. pipe, [illegible] $55 a $58; Staves, white oak, pipe, heavy, $75 a $80; Staves, white oak, pipe, culls, $30 a $35; Staves, do. hhd., heavy, $70; Staves, do. bbl. light, $30 a $35; Staves, do. bbl. culls, $20; Mahogany—St. Domingo, fine crotches, per foot, 35c. a 45c.; St. Domingo, ordinary do., 20c. a 25c.; Honduras, fine, 12½c. a 15c.; Mexican, 13c. a 15c.

NAILS.—Cut, 3¼c. a 3¾c. per lb.; American clinch, 5c. a 5½c.; American horse-shoe, 14½c

OILS.—Olive, Marseilles, baskets and boxes, $3.35 a $3.40; Olive, in casks, per gallon, $1.10 a $1.15; Palm, per pound, 9c. a 9¼c.; Linseed, city made, 57c. a 58c. per gallon; linseed, English, 57c. a 58c.; whale, fair to prime, 49c. a 52c.; whale, bleached 59c. a 60c.; sperm, crude, $1.35 a $1.40; sperm, unbleached winter, $1.45; lard oil, No. 1 winter, 87½c. a 92½c.; red oil, [illegible] distilled, 55c.; Wadsworth's refined rosin, 30c. a 40c.; Wadsworth's boiled [illegible] for painting, 35c. a 40c.; Wadsworth's tanner's improved and extra, 30c a 40c.; Wadsworth's machinery, 50c. a $1; camphene, 45c. a 47c.; fluid, [illegible] a [illegible]

PAINTS.—Litharge, American, 7c. per lb.; lead, red, American, 7c.; lead, white, American, pure, in oil, [illegible] lead, white, American, pure, dry, 7¼c.; zinc, white, American, dry, No. 1, 5c.; zinc, white, French, dry, 7¼c.; zinc, white, French, in oil, 9½c.; ochre, ground in oil, 4c. a 6c.; Spanish brown, ground in oil, 4c.; Paris white, American, 75c. a 90c. per 100 lbs.; vermillion, Chinese, $1.12½ a $1.22; Venetian red, N. C., $1.75 a $2.25 per cwt.; chalk, $4 per tun.

PLASTER-OF-PARIS.—Blue Nova Scotia, $2.75 per tun; white, $3.5. calcined, $1.20 per bbl.

RESIN.—Common, $1.60; per 310 lbs.; strained, No. 2, &c., $1.60 a $1.70; No. 1, per 280 lbs. $1.75 a $2.50; white, $2.50 a $3; pale, $3 a $3.50.

SOAP.—Brown, per pound, 5c. a 8c.; Castile, 8¾c. a 9c.; Chemical olive, 7c. a 7¾c.

SPELTER plates, 5¼c. a 5½c. per lb

STEEL.—English cast, 14c. a 16c. per lb.; German, 7c. a 10c.; American spring, 5c. a 5½c.; American blister, 4½c. a 5½c.

SUMAC.—Sicily, $80 a $90 per tun.

TALLOW.—American prime, 10¾c. per lb.

TIN.—Banca, 32c.; Straits, 30c.; plates, $6.25 a $9.30 per box.

WOOL.—American, Saxony fleece, 55c. a 60c. per lb.; American full blood merino, 48c. a 52c.; extra, pulled, 45c. a 50c.; superfine, pulled, 39c. a 43c.; California, fine, unwashed, 24c. a 32c.; California, common, unwashed, 10c. a 18c.; Mexican, unwashed, 11c. a 14c.

ZINC.—Sheets, 7c. a 7¼c. per lb.

The foregoing rates indicate the state of the New York markets up to December 22d.

There has been a slight change in the prices of flour, cotton, resin and oil, but so small that no effect has been produced on the sales thereby. Little will be done in the way of sales for a week or two, and until the results of the year 1859 are fairly understood by manufacturers and merchants so that they will be enabled to know how they stand in their business relations. A very confident feeling exists that a good spring business will be conducted.

The foreign importations during December have been large, and it is difficult to account for this result, as it appears to be imprudent speculation. In one week the importations amounted in value to $5,155,000, against only $2,735,000 for the same period last year, while our exportations at the same time were only valued at $1,166,769, for general merchandise, and $673,223 of specie; total $1,839,992, leaving a debt against us of $3,315,108.

There is but little demand for our grain and flour at present in the English markets, because great quantities, at low prices, have been supplied by ports on the Baltic.

A NEW CHROME YELLOW.

Under the above name a yellow color has been for some time in commerce which is quite certain to find much favor, although its price is far higher than that of the ordinary chrome yellow. It is of a splendid yellow, and differs essentially in its tint from the best samples of chrome yellow. It is pulverulent, of small specific gravity, loses nothing in weight at a red heat, but becomes transitorily reddish brown, and is partially taken up by water without entirely dissolving in that fluid. It dissolves in muriatic and nitric acids; if the acid is poured over it in a concentrated state, a slight effervescence takes place. When prepared with but little acid the solution is somewhat turbid, but does not leave any considerable portion when filtered. When heated with alcohol, the solution in muriatic acid becomes intensely dark green; if more alcohol and then sulphuric acid be added, a white precipitate is produced. Solution of sulphate of lime does not precipitate the solution of the color in muriatic acid, but this is done by sulphuric acid with or without the addition of alcohol. The reddish-yellow color of the solution in nitric acid changes by heating, with the addition of alcohol, into a beautiful blue. If acetate of lead be added to the dilute solution in nitric acid, a heavy precipitate of the color of chromate of lead makes its appearance. If an excess of lead were added, filtered, the excess of lead and the lime precipitated by sulphuric acid, alcohol added, filtered and evaporated, large quantities gave a residue, which, when dissolved in water and mixed with chloride of platinum with the addition of muriatic acid, furnished octahedra of platino-chloride of potassium. The investigation gave no magnesia or other bases except lime and potash. Of acids, besides the chromic acid, which was undoubtedly present from the preceding experiments, there was only a small quantity of sulphuric acid.

When the author mixed a hot saturated solution of bi-chromate of potash with a saturated solution of chloride of calcium, a precipitate was produced, which, when washed and dried, was undistinguishable from the Steinbuhl yellow.

The substance gave 3·1 per cent to distilled water after short stirring. With nitrate of silver, the yellow filtrate gave a red precipitate of chromate of silver, which was rapidly converted into white chloride of silver on the addition of a few drops of muriatic acid. Sulphuric acid and alcohol produce a strong turbidity in the filtrate. When boiled with reducing organic matters and muriatic acid, the yellow filtrate loses its color, without, however, acquiring more than a tinge of green. Acetate of lead precipitates the yellow filtrate with the color of chromate of lead. Chloride of platinum produces a very slight turbidity in the original filtrate. Even in 16 hours no precipitate is deposited.

This yellow consists, therefore, of chromic acid, lime and potash; when stirred for a short time with cold water, it parts with chromate of lime.

The poisonous qualities of chromic acid and its soluble salts, and the circumstance that the color parts with perceptible, although not large quantities of chromic acid to cold water, render this yellow an extremely dangerous coloring matter, the employment of which, in confectionery and similar trades, must not be thought of.—*London Chemical Gazette.*

It will be seen by an advertisement in another column that the celebrated engravers, Messrs. Waters & Tilton, offer to furnish "proofs" of the large engraving of the Machinery Department of the late fair of the American Institute, at 50 cts each.

© 1860 SCIENTIFIC AMERICAN, INC.

WEEKLY SUMMARY OF INVENTIONS.

The following inventions are among the most useful improvements patented this week. For the claims to these inventions the reader is referred to the official list on another page:—

PIANOFORTES.

In the construction of square pianofortes "overstringing," that is to say, the arrangement of the strings of a number of the lower notes in a tier above the others, has been adopted quite commonly and with great advantage, for the purposes of using larger strings, and a greater number of them, and of obtaining more space laterally between the strings, and a substantially similar system of stringing has been applied to upright pianofortes; but owing to the form of the case, and arrangement of the key-board and action of grand pianofortes some difficulties have seemed to present themselves in the way of applying the system to them. This invention consists in a certain arrangement of the strings of a grand pianoforte in two tiers whereby not only the same advantageous results obtained in pianofortes of other forms by overstringing, are obtained in the grand form, but the bridges are brought nearer to the middle of the sound-board than they are in any other grand pianoforte. The credit of this contrivance is due to Henry Steinway Jr., of this city.

LEVER ESCAPEMENTS FOR WATCHES &C.

The object of this invention is to obtain a longer movement, *i e.*, a greater amonnt of revolution of the balance for every vibration of the lever and pallets, and a longer intermision of the movement of the 'scape wheel than is done by the lever escapement in common use and thereby to enable watches and clocks to be made to run for a greater length of time with the same number of wheels as are commonly employed, or for the same length of time with a smaller number of wheels. The invention consists in providing the escapement lever with two or more forks to operate upon the same pin or cylinder attached to the balance wheel for the purpose of giving to the balance two or more pulsations in the same direction for every single vibration of the lever, and furnishing the escapement wheel with two sets of teeth operating in combination with a single pair of pallets or otherwise in an equivalent manner providing for a duplex action, thus making an escapement of novel character which may be termed the "Duplex Lever Escapement." The inventor of this improvement is Nathan Spicer, of Saint Paul, Minn.

STEREOSCOPE APPARATUS.

Some very valuable improvements in the construction of stereoscopic boxes have been patented last week. The pictures are arranged in a long chain, back to back, so that one is upright, when the other is upside down, and these pictures are brought before the eye-glasses by means of a skeleton wheel that admits of exhibiting glass pictures as well as paper pictures. As the pictures pass over this wheel, they arrange themselves on the bottom of the box in the same order in which they were first introduced into the box, and by raising a sliding partition in the box and pushing the pile of pictures from one side of the box to the other, the chain of pictures is ready to exhibit its other side. The inventor of these improvements is Thomas C. Roche, of this city.

MODE OF CASTING PIPE.

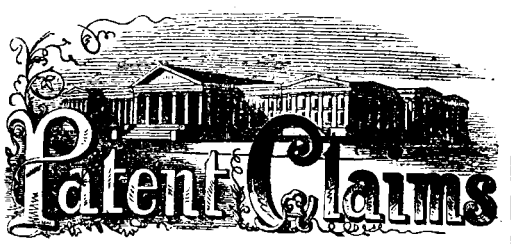
This invention relates to an improvement in dry sand molding for casting small pipes, whose molds have hitherto been necessarily jointed in order to admit of blackwashing and to remove the belt or boss patterns. The object of the invention is to form the molds without joints for casting with belts or bosses, and blackwash the same in a perfect manner. The patentees of this invention are J. Firth and J. Ingham, of Phillipsburgh, N. J.

MACHINE FOR PRESSING COTTON.

The object of this invention is to obtain a simple and efficient device for expeditiously pressing cotton and other fibrous substances into sacks—such substances as do not require or will not admit of being subjected to a very great pressure, but which, in order to economize in transportation and storage, require to be packed or compressed as much as possible without injury. The invention is more especially designed for pressing into sacks sea-island or long-staple cotton, which, as is well known, cannot be compressed into bales as the ordinary or short staple cotton, in consequence of the injury that would be done to the fiber by the extreme pressure. The work of pressing long-staple cotton into sacks has hitherto been by a simple manual operation, consuming considerable time and endangering the health of the operatives. These difficulties, it is believed, are fully obviated by this invention. This improvement was designed by Lewis S. Chichester, of this city

TAP FOR CUTTING SCREWS.

The object of this invention is to expedite the withdrawal of the tap from its work after the latter has been performed, so as to save the time hitherto lost by the slow reverse withdrawal movement of the tap in the screw cut by it, and consequently obviate the necessity for the reversing gear hitherto necessarily employed in order to withdraw the tap. The inventors of this improvement are W. & R. Foster, of this city.



ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING DECEMBER 20, 1859.

[Re orted Officially for the SCIENTIFIC AMERICAN.]

*** Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

26,464.—John I. Armfield, of Jamestown, N. C., for an Improved Apple-parer, Corer and Slicer:

I claim the combination of the two levers, B C, connected by the link, b, one lever, B, being provided with the cutter, F, and the other lever, C, having one end fitted on the arbor, D, substantially as and for the purpose set forth.

[This invention relates to a peculiarity connected with the cutting or quartering device whereby the latter, by a simple means, is made to act very efficiently. The invention consists in attaching the cutter that cuts or quarters the peeled apples to a lever which is connected to another lever, one end of which is fitted on the arbor of the fork; the parts being so arranged that by actuating the lever to which the cutter is attached for the purpose of cutting or quartering the apple, the other lever which is fitted on the fork arbor will move towards the cutter and bear against the inner end of the apple and force the same against the advancing cutter.]

26,465.—John Augspurger, of Trenton, Ohio, for an Improvement in Cattle Pumps:

I claim, first, The combination and arrangement of the platform, B, levers, N N', springs, f, weights, P, rods, O, and brake wheels, F, operating substantially as and for the purpose set forth.

Second, The arrangement of the float, l, rod, i, and valve, k, in the described combination with and relation to the bucket, K, and hinged platform, B, operating in the manner and for the purpose explained.

26,466.—John H. Bailey, of Sand Ford, Ind., for an Improvement in Locomotive Traction Vehicles:

I claim, first, The means employed for rotating or communicating power to the wheels, D D, to wit, the fixed pinion, p, on the shaft, H, loose or sliding pinions, q q, wheels, s, pinions, v, and toothed rims, w w, substantially as described.

Second, The combination of the wheels, J D D, when applied to a traction engine, and arranged for joint operation, substantially as and for the purpose set forth.

[This invention is more especially designed for agricultural purposes, such as the drawing of gang plows, harrows, seeding machines, &c. The invention consists in a peculiar arrangement of the driving gear, and the manner of applying the power thereto, whereby the machine is placed under the perfect control of the driver or attendant.]

26,467.—S. W. Baker, of Providence, R. I., for an Improvement in Blankets for Printing:

I claim a rubber or gutta-percha or other elastic printing band or blanket having either roughened selvages or margins, or the whole of its surface roughened, substantially as set forth.

26,468.—A. J. Bell, of Greenupsburgh, Ky., for an Improved Wrench:

I claim the combination of the jointed lever, F, wedge, E, and tooth, e, with the sliding jaw, D, and bar, A, as and for the purpose shown and described.

[This invention consists in attaching a jointed lever to the movable or sliding jaw of the wrench, and having a wedge connected to said lever and a tooth, the stem of the wrench being serrated or toothed, and the whole so arranged that a very simple and durable wrench is obtained, and one that may be readily adjusted to suit various sized nuts.]

26,469.—Albert Betteley, of Boston, Mass., for an Improvement in Hoisting Machines:

I claim, first, Bringing the car to a stop whenever (while in motion) its door may be opened, by causing the shipper rope to be pinched or held, substantially as above described.

Second the arrangement, substantially as above specified, for causthe car to be stopped at proper times and places; said arrangement consisting of cam, m, spring, i, levers, K G, operating together and upon the shipper cord.

26,470.—Louis Brandt, of Indianola, Texas, for an Improvement in the Arrangement for Supplying Air to the Furnaces of Steam Boilers from the Wheel-houses of Steamers:

I claim supplying air under pressure to the furnace or furnaces of steamers by means of the paddle wheel and the peculiar curved pipe with water escape passage leading from the casing or housing of the same to the fire, or under the grates of the furnaces, substantially as and for the purposes set forth.

[This invention consists in constructing the paddle wheel house of a steamer in the form of a fan case, and having an air tube lead down from said case under the grate bars of a furnace. As the paddle wheel revolves, the air raised by its blades is forced down the tube, and up through the grate bars to the fire, and thus a perfect combustion of the coal effected under all circumstances on board of seagoing vessels or steamers. The air tube is novel in its form, being provided with a water escape, so that if any water is raised by the blades it will, by its own gravity, fall back and pass off through the escape passage while the air descends. This is certainly a very good and cheap arrangement.]

26,471.—B. Bridendolph, of Clear Spring, Md., for an Improvement in Corn-shellers:

I claim the differential feeding and shelling screw, F, constructed as described, in combination with the spout or trunk, G, and face wheel, C, when these several parts are arranged and operate together in the manner described for the purpose specified.

[This invention consists in the employment or use of a corrugated and toothed face wheel, rotating screw and spout or trunk, so arranged to operate that the desired work, to wit, the shelling of corn, may be performed very expeditiously and in a very perfect manner.]

26,472.—Robert D. Brown, of Prattsburgh, N. Y., for an Improvement in Wagon Brakes:

I claim the combination and arrangement of the brake mechanism lever, E, and connecting rod, F, when the latter is attached directly to the front axle so as to be operated by the backward movement of the front truck; the said movement being allowed by the slot, H, in the reach or coupling bar and the roller, G, in the bolster, substantially as set forth.

26,473.—Henry F. Brown, of Chagrin Falls, Ohio, for an Improvement in Skirt Supporters:

I claim an improvement in the supporter aforesaid by connecting the hoops or bands by a clasp or inflexible joint, substantially as described.

26,474.—Joseph P. Buckland, of Chicopee Falls, Mass., for an Improvement in Coal-sifters:

I claim, first, A dumping or tipping sieve provided with a movable tail-piece or gate so arranged that the tipping or slanting of the sieve causes the opening of the end or side of the same for the free passage of the coal or other substance sifted.

Second, A combination of the scrolls, C C, and cams, D D, with the sieve, A, when arranged and operating substantially in the manner and for the purpose described.

56,475.—Bethel Burton, of Brooklyn, N. Y., for an Improvement in Breech-loading Fire arms:

I claim the construction and relative arrangement of the breech-supporter, f, with the sliding breech, d, sectional screw, 10, and guide slot, 11, and pin, 12, substantially as set forth.

26,476.—R. W Carrier, of Sherburne, N. Y., for an Improvement in Hold-backs:

I claim the combination and arrangement of the open hold-back loop or eye, pivoted lever stop bar which has an extension or heel on its lower end, and the flatspring, substantially as and for the purposes set forth.

[This invention relates to an improvement in the metal loops or eyes that are attached to the thills of vehicles to receive the straps of the harness by which the vehicle is held back in descending hills. The invention consists in having the loops or eyes provided with yielding bars or studs at their front sides, so that the straps may detach themselves as the horse passes out of the thills. The object of the invention is to allow the horse to be readily detached from the vehicle when necessary, and not permit the hold-back straps, as hitherto, to form a positive connection with the thills, which is a fruitful source of accident.]

26,477.—S. W. Chamberlain, of Three Oaks, Mich., for an Improved Gate:

I claim the arrangement and combination of the gates, A A, posts, B B, arms, D, links, E, and levers, F, in connection with the cords, f h h' h'' and h''', constructed and operated substantially as set forth.

[The two wings of this gate are connected together by means of suitable levers in such a way that they swing open in opposite directions and that neither one will move independent of the other. By this means the effect of the wind on the gate is exactly counterbalanced, so that the same operates with equal facility on a windy as on a still day. When the gate is closed it is fastened by a clasp which also serves to retain the same when open, and which is operated by the same cord that serves to open and close the gate.]

26,478.—Mathew Chapman, of Greenfield, Mass., for an Improvement in Attaching Handles to Cutlery:

I claim securing handles to cutlery and other tools or implements, by having a screw thread, a, formed on the tangs, B, and provided with plane longitudinal surfaces, b, in connection with the cylinder or nut, C, fitted in the handle and hammered or compressed to fit the screw, a, and its plane surfaces, b, substantially as and for the purpose set forth.

[The object of this invention is to obviate the use of cement in securing handles to cutlery and various tools, and to obtain a firm and durable connection of the two parts by a very simple and economical means.]

26,479.—John B. Cornell, of New York City, for an Improvement in the Construction of Vault Lights:

I claim producing an improved illuminating plate by the process of combining the illuminating and metallic portions of said plate with each other, substantially in the manner set forth.

26,480.—C. W. Corr, of Carlinville, Ill., for an Improvement in Steam Valves:

I claim, first, Providing the extremity of the driving shaft, F, within the steam chest, with a slot to receive the head, k, of the valve, stem, and permit the self-adjustment of said head within the slot, as set forth.

Second, The arrangement of the screw threads upon the valve and valve stem, substantially as shown, so that the valve will adjust itself if the friction becomes too great, as set forth.

[This invention consists in a rotary valve of novel form which may be constructed to admit steam to the cylinder of the engine during the stroke of the piston, within certain limits, as may be desired, and which provides for a free exhaust during the whole stroke of the piston. It further consists in a certain mode of applying the stem of such valve that the valve may be made self-adjusting, to prevent too great friction between its face and the seat on which it works.]

26,481.—Louis Michel Frangois Doyere, of Paris, France, for an Improvement in Apparatus for preserving Grain. Patented in France March 28, 1854:

I claim the method of constructing or arranging air-tight chambers or granaries for the preservation of corn and other grain, as before described.

26,482.—Nathaniel Drake, of Newton, N, J., for an Improvement in Stone-loading Wagons:

I claim the employment or use of the shaft, D, with one or more drums, G, placed loosely on it—the shaft and drums being provided with ratchets, in combination with the pawls, I, and the adjustable bar, k, provided with the pulleys, L; the whole being applied to a mounted frame, and arranged substantially as and for the purpose set forth.

[The object of this invention is to obtain a device that will facilitate

© 1860 SCIENTIFIC AMERICAN, INC.

the clearing of land from stones, those of large dimensions that cannot be lifted by hand. The invention consists in a peculiar arrangement of windlasses placed on a frame mounted on wheels and provided with pawls devised in a novel way to effect the desired end.]

26,483.—Joseph L. Dutton, Sen., of Philadelphia, Pa., for an Improvement in Anti-friction Boxes:

I claim interposing between a revolving and stationary surface any convenient number of beveled anti-friction rollers so formed that the portion of each roller on which the revolving surface bears shall be larger in diameter than the portion or portions of the roller which bear on the stationary plate, as set forth.

26,484.—Thaddeus Fairbanks, of St. Johnsbury, Vt., for an Improvement in Platform Scales:

I claim the arrangement and application of the yoke stirrups their concave steps or bearings and the pivots of the two multiplying and transmitting levers, substantially as specified; the whole being for the purpose and to operate as described.

I also claim combining with the rod, I, and the yoke applied thereto, as described, the cap or bonnet, a2, the same being for the purpose as specified.

26,485.—Thaddeus Fairbanks, of St. Johnsbury, Vt., for an Improvement in Platform Scales:

I claim supporting the the fulcrum of a transmitting lever, D, by the platform or an extension therefrom, essentially as specified.

I also claim the combination of the rocker block with the stirrup link and the bearing pins or knife edges of the connected levers, C D, substantially as described.

I also claim constructing the platform frame with the passages, a3 a3, through each of its end timbers and for the reception of the inferior arms of the multiplying levers, as described.

And I also claim providing such platform with loop passages leading downward out of the lever passages made in the end timbers, as and for the purpose described.

26,486.—John Firth and John Ingham, of Phillipsburgh, N. J., for an Improvement in Pipe Molding:

We claim, first, The employment or use of the flexible or elastic ring, E, in connection with the body pattern, D, flasks, B C, and bottom plate, A, or its equivalent for the purpose specified.

Second, Blackwashing the molds by means of a brush, F, or an equivalent device, supplied with the black wash and passed through the molds, substantially as and for the purpose set forth.

26,487.—Wm. Foster and Robert Foster, of New York City, for an Improvement in Screw Taps:

We claim the combination of the oblique-backed taps, C, and slotted collar, B, with the tapering or conical stock, A, substantially as shown and described, so that on turning the collar the cutting threads of the taps will be released from the nut, and thus allow the tool to be withdrawn, all as specified.

26,488.—Wm. Frazier, of Hartford, Conn., for an Improvement in Belt-fastenings:

I claim the arrangement of duplicate plates, A B, of raw hide or other flexible or suitable material, and in providing one (or both) of the plates, A B, with metallic hooks, D, which hooks are made to pass through the perforations in the belt, F, and in the plates, A or B, to connect and hold the two ends of the belt, F, together (in contradistinction for the use of the metallic plates, screws, lace-leather, &c.), substantially as in the manner and for the purpose described.

26,489.—Dennis C. Gately, of Newtown, Conn., for an Improvement in the Manufacture of Caoutchouc Belting:

I claim the method described of manufacturing belts or bands of india-rubber or gutta-percha, the same consisting in placing them in contact with sheets or strips of paper or cloth, having a smooth enameled or polished surface, as set forth, and then heating them as described.

29,490.—W. G. Goodale and R. L. T. Marsh, of Centralia, Ill., for an Improvement in Steam Excavators:

We claim, first, The combination, with a locomotive steam engine, of an earth-elevator, J, or its equivalent, and suitable earth receptacles, or their equivalents, so that the machine may be moved by its own power, under the guidance of an attendant, to the spot to be excavated; then be made to load itself and transport the load to the desired place for discharge, in the manner set forth.

Second, The combination with an excavating machine, made as set forth, of a railroad track, O, as shown, with or without the turntables, as set forth.

[This invention consists in connecting with a suitable traction engine an elevating device, plow or excavator, and a railway for cars, provided with turn-tables, the whole being so arranged that a series of cars may be filled with earth, conveyed to the dumping-place, and their contents discharged with the greatest facility.]

26,491.—D. B. Hale, of New York City, for an Improvement in Skirt-supporters:

I claim the waist, A, in combination with the extension, B, expanded by the insertion of hoops, b b' b'', having their ends connected by tying them and forming entire circles, substantially in the manner and for the purposes set forth.

26,492.—Hayward A. Harvey, of New York City, for an Improvement in Chairs for Railroads:

I claim forming the chair with lips extending over the web or base of the rails, and with a groove or equivalent reception for a wedge, substantially as described; but this I only claim when combined with a wedge to be driven across the longitudinal plane of the rails, and passing under the base of the two rails to force and hold them up against the lips of the chair, and to form a base or rest for the base of the ends of the two sections of rails to rest on, substantially as and for the purpose specified.

26,493.—Alexander Hay, of Philadelphia, Pa., for an Improvement in Shoes and Gaiters:

I claim inserting in the shoe or gaiter, at the points where it is to be fastened, a piece or pieces of elastic rubber cloth, for the purpose of fastening the shoe or gaiter with hooks and eyes, or buttons, or buckles, substantially as described, and thereby dispensing with shoe strings.

26,494.—Geo. V. Hazard, of Torrey, N. Y., for an Improved Door-fastener:

I claim the part, A, constructed and arranged as and for the purposes set forth.

26,495.—Simpson S. Henderson of Oxford, Ohio, for a Rat Trap:

I claim the combination of the springs, D, with cone spools, H, catch, a, detent, b, and bait wire, d, forming the trigger, and striker, G; the whole operating substantially in the manner and for the purposes set forth.

26,496.—D. K. Kickok, of Morrisville, Vt., for an Improved Clothes-dryer:

I claim the internally-grooved hub, H, and spring catch, c, in combination with hollow-headed shaft, S, headed pin, P, and securing cord, d, substantially as and for the purpose set forth, when arranged with hub, H', braces, B, arms, A, and cord, c'.

26,497.—Levi L. Hill, of Greenport, N. Y., for an Improvement in Hydro-carbon Vapor Apparatus:

I claim the combination, with a vaporizing vessel, of the bellows, air-receiver and eduction pipe, as shown, or in an equivalent manner, for the purposes set forth.

[This invention consists in a certain mode of arranging and applying and combining two bellows, an air-receiver and a rotary shaft, driven by a weight and carrying tappet wheels for operating the bellows, whereby a constant supply of air is produced at a suitable uniform pressure. It further consists in a certain arrangement of the blowing apparatus in combination with the vessel containing the hydro-carbon liquid, from which the vapor for changing the air is obtained, whereby a complete apparatus for vaporizing the liquid and charging the air with its vapor is brought within a small compass and into a very compact form.]

26,498.—Edwin Hosmer, of Bedford, Mass., for an Improvement in Stump-extractors:

I claim the improved lever and hook stump-extractor, as constructed with the combination of the holding tongue, H, and its supporter, K, and with each united by a universal joint, in manner and so as to enable the parts to operate substantially as specified.

26,499.—Thomas W. Houchin, of Worcester, Mass., for a Machine for Cutting Paper:

I claim the combination and arrangement of the knife, H, slides, I I, and connecting bar, L, with coupling arms, J J, eccentrics, f f, and shaft, K, substantially as for the purposes set forth.

26,500.—Enoch Jacobs, of Cincinnati, Ohio, for an Improvement in Iron Plate Jail:

I claim, in the construction of jails and prison houses, the improved iron walls for the same, consisting of the following parts, arranged and united as set forth, to wit: the entire wall plates, A, having their edges closely abutting the joint plates, e, united to and uniting the plates, A, by rivets, i, which have their riveted ends in wards and counter-sunk to the depth of the thickness of the plates, A; all in the manner and for the purposes set forth.

26,501.—William A. Kenrick and George H. Whitcher, of Boston, Mass., for an Improvement in Graving Docks:

We claim the floating dock, A, and the stationary receiving basin or tank, B, in combination and as furnished, not only with one or more connection pipes and gates for the discharge of water from the dock into the tank, or vice versa, but with one or more passages and gates arranged in the tank, so as to either discharge water therefrom into the sea, or admit it to pass from the sea into the tank; all substantially in manner and for the purpose as specified.

And we also claim the elevating slide, a, in combination with a connection pipe of the dock, and a deep opening, e, made in the tank; the said slide being arranged therewith, and connected with the dock substantially as specified.

26,502.—Henry Kipple and Jacob D. Bullock, of Philadelphia, Pa., for an Improvement in Car Trucks:

We claim the bolster, D, and platform, G, with the intervening springs, I, of any suitable construction, in combination with the inclined links, H H, their sockets, h and i, and the pins, a; the whole being arranged on the truck substantially as set forth for the purposes specified.

26,503.—John G. Kunze, of New York City, for an Improvement in Pianofortes:

I claim, first, Supporting the bridge, F, on columns or distance pieces, n, to admit any number of braces for the hitch plate, D, between the strings and the top of the sounding-board, and likewise to admit of a greater vibration of the sounding-board, in the manner and for the purpose substantially as described.

Second, I claim the arrangement of additional braces, G, to the hitch plate, D, situated between the strings and the top of the sounding-board, and connecting said braces with the braces, B, or the wooden truss-work situated between the frame, A, in the manner and for the purpose set forth.

Third, I claim the application of a bottom sounding-board, P, when in connection with a lower metallic frame or hitch plate, L, covered with strings, in the manner and for the purpose substantially as described.

Fourth, I claim the elastic spring brace, J, to connect the two sounding-boards together for the purpose substantially as described.

Fifth, I claim the arrangement of the strings in two rows, with the use of a curved hammer line, in pianofortes where the action strikes the strings from above downwards, as set forth.

26,504.—Richard S. Lawrence, of Hartford, Conn., for Improvement in Breech-loading Fire-arms:

I claim, first, The combination of the detachable plate, B, between the barrel and the sliding breech, with the expanding ring, c c, substantially as and for the purpose set forth.

Second, In combination with the sliding breech and plates, I claim the hollow nipple, f, situated in the center of the gas chamber, and projecting forward nearly or quite to the face of the breech, substantially and for the purpose set forth.

[This invention relates to that description of breech-loading fire-arms which have what is commonly known as the "sliding-breech." It consists in making the sliding breech of two pieces; one of which pieces, constituting the entire back of the breech, has in it a cylindrical cavity larger than the bore of the barrel, and the other of which, constituting the entire face, has a counter-sunk projection which enters and fits the said cavity in such a manner that the said projection combines with the said cavity to form a gas chamber in the rear of and of larger bore than the barrel, and communicating with the barrel by a suitable opening in the front part of the breech, which admits the gases into the said chamber at each discharge, to force apart the two pieces of the breech, and cause the front pieces to form a perfect gas-tight joint with the rear end of the barrel; and thus, while preventing any loss of the explosive force, preventing the corrosion of the face of the breech, and permitting it to slide with perfect freedom after frequently and quickly repeated firing. It further consists in the employment, in combination with the so constructed breech, of a hollow cone situated in the center of the cavity of the rear portion of the breech and projecting nearly even with the front face of the breech, for the purpose of communicating the fire from the capor other priming to the cartridge or charge in an exact line with the center of the bore of the barrel.]

26,505.—James Little, of Evansville, Ind., for an Improvement in Stave Machines:

I claim the adjustable bed, n, in combination with the rod, r, and lever, r'; all being constructed and arranged to operate substantially as and for the purposes set forth.

26,506.—James A. Lowe, of New York City, for an Improvement in Water Traps:

I claim the water trap shown, when cast without a seam (in lead or composition), as a new article of manufacture.

26,507.—James J. Mapes, of Newark, N. J., for an Improvement in Fertilizers:

I claim the production of the fertilizer for soils by the combination of dried blood with the compound which I have herein specified, as my improved superphosphate of lime, or any equivalent therefor substantially the same.

26,508.—M. R. Margerum and T. P. Marshall, of Trenton, N. J., for an Improved Clasp for Hitching Straps:

We claim the arrangement of the hole, H, and the key, K, in combination with the sliding part, A B, for fastening hitching straps, substantially described and for the purpose set forth.

26,509.—Charles Millar, of Utica, N. Y., for an Improvement in Wood Screws:

I claim construction of wood screws having a shank, or that portion of the wire lying between the thread and the head of the screw reduced in its diameter, so that, without any enlargement of the orifice beyond that made by the stem, the screw may be driven home without increase of friction at the shank, and without injuring the screw or to the hold thereof upon the fibre of the wood, as described

26,510.—Geo. Miller and Caleb M. Andrews, of Providence, R. I., for an Improvement in Washers:

We claim a washer, constructed of a leather strip wound in coil form, and with or without the interposition of other substances between its convolutions, substantially as set forth.

[This invention consists in forming the washers by winding leather strips of any convenient width in coil form, whereby the sides or faces of the washers present the grain or fiber of the leather endwise to the running or working surfaces of articles to which they are applied. The convolutions of the leather may be connected by cement; and, in certain cases where necessary, soft metal plates or other suitable substance may be interposed between the convolutions in order to protect the leather from wear.]

26,511.—G. W. Mitchell, of Jackson, Tenn., for an Improvement in Shuttles for Sewing Machines:

I claim the shuttle formed with an open cavity through it in a transverse direction to its movement with a bobbin to fit the cavity, the heads of the bobbin forming a part of the sides of the shuttle, and being kept in position by the sides of the shuttle race or carrier, substantially as described and set forth.

26,512.—Amos B. Morey, of St. Louis, Mo., for an Improvement in Platform Scales:

I claim the specific arrangement of the braces, B B C C d e and f with the lever, A, and the head, H, as shown and described.

26,513.—John Newell, of Lowell, Mass., for an Improved Nail Plate-feeder:

I claim, first, In combination with a magazine for containing a pile of plates, an automatic driver that takes the under plate of the pile, and feeds it up toward the cutters in regular succession, substantially as described.

Second, I claim, in combination with the automatic driver, the geared hub and segment and hinged lever, R, for turning and moving the nail plate to the driver and to the cutters, substantially as described.

Third, I claim, in combination with the driver or the carriage to which it is connected, the lever, S, with its several connected parts for throwing out and holding out of gear the feeding devices while the driver is in the act of bringing up a fresh nail plate, as set forth.

Fourth, I claim, in combination with the feeding shaft, and its grooves, 1 2 3, the pivoted switch, d, on the carriage, for the purpose of giving said carriage a rapid rotating and partial advanced motion, and a slow feed motion, substantially as set forth.

26,514.—Cæsar Neumann, of New York City, for an Improvement in Skeleton Skirts:

I claim the spring joint or hinge, arranged and constructed as specified, by which the hoop can be contracted and expanded, substantially in the manner and for the purposes set forth.

26,515.—Carlton Newman, of Birmingham, Pa., for an Improvement in Preserve Cans:

I claim the use of the loose or detached elastic band, when used in connection with the flaring rim, c, or lid, b, rib or ridge, e, on, and groove, f, in, the neck of the jar, or the equivalents of said rim, ridge and groove, arranged, constructed and used as described and for the purpose set forth.

26,516.—D. G. Olmsted, of Vicksburgh, Miss., for an Improvement in Cotton Gins:

I claim, first, Feeding the cotton into the roll box through a hulling grate, H, so as to exclude the principal hulls and trash, while the seed cotton is admitted as specified.

Second, I claim the projections, f f, at the intersection of the ribs of the ginning grate, F, and extension, G, for the purpose of directing the cotton past the seed space at the lower edge of the hulling grate, H, in combination with said grate, H.

Third, I claim the arrangement of the air-directing partition, a, constructed substantially as described, in combination with the hatchel cylinder, E, for the purpose specified, at the same time disclaiming its use in any other manner or connection.

Fourth, I claim the extensions, o o, when arranged as continuations of the brush wings, d d, around the ends or heads of the brush cylinder for the purpose specified; while I disclaim the use of wings or fans on the ends of the brush cylinder unconnected with the brush wings, d d.

26,517.—Charles G. Page and Ralph J. Falconer, of Washington, D. C., for an Improvement in Pipe Couplings:

We claim combining the lateral or transverse movement of the male and female sections, a b, an endwise movement, to effect the tightening of said sections, as set forth.

26,518.—Charles Grafton Page, of Washington, D. C., for an Improvement in Door Bolts:

I claim the locking of bolts, when bolted or shut, by means of rotary handles moving with the bolts, and operating substantially upon the principles set forth.

26,159.—Du Bois D. Parmelee, of Salem, Mass., assignor to John A. Greene, of Beverley, Mass., for an Improvement in the Manufacture of Rubber Articles:

I claim the employment, in the manufacture of india-rubber sheets, whether combined or not with cloth, and when the same are to be treated in the cold way to effect the change, as described, on either side of the tank containing the hermizing solution, of a feeding mechanism, so arranged and operated that the sheet may be fed in and out of the tank at a uniform rate, and free from injurious handling and draft or strain, substantially in the manner and for the purposes set forth.

26,520.—William Patterson, of Constantine, Mich., for an Improved Machine for Forming Hubs:

I claim, in combination with the swivel nut, i, having a yielding or spring seat, M, the adjustable collar, L, and cutter shaft for causing the cutter to form a shoulder in the hub, in a plane parallel to the end of the hub, while the cutter is carried and fed by an inclined screw shaft, as described.

I also claim the combination of the guiding spring bar, I, and its adjusting screws, m n, with the slide, D, center disk, G, and cutter shaft, for the purpose of boring out the interior of the hub and cutting off the ends of the spokes, and thereby prevent the latter from resting and pressing unequally on the box or on the exposed part of the axle, as described.

26,521.—Calvin Pepper, of Albany, N. Y., for an Improvement in Heating Apparatus:

I claim the use of fine silicious sand for radiating heat according to the application thereof, substantially as described, the radiation being principally from the sand, and the radiation from the sand coming from between the meshes of the fine wire gauze screen, or the openings of minutely perforated metal, or other solid substance, the metallic gauze or perforated metal being used for the purpose of retaining the sand while admitting radiation through its meshes, and the sand being heated by fuel of wood, coal, gas, burning fluid, or other fuel, or from hot metal, hot air, hot water, or steam in stoves, tubes, conductors, or other heating apparatus, substantially as described, and subject to the disclaimer and exceptions as stated.

26,522.—Albion Ransom, of Albany, N. Y., for an Improvement in Stoves:

I claim the application to, and use with sheet or thin metal stoves, of an independent hood flue formed and fitted for attachment to such stoves, as described, and for the purposes set forth in the specification.

© 1860 SCIENTIFIC AMERICAN, INC.

26,523.—Abraham Reese, of Pittsburgh, Pa., for an Improvement in Rails for Street Railroads:

I claim making iron rails for street railroads of the shape substantially as described, having on each side a head or projection at one edged of the rail, with a flat base extending from the projection or head to the other side, both sides or faces being finished alike, so that the rail may be used either side up and reversed when one side is worn out.

26,524.—Celestin Ringel, of San Francisco, Cal., for an Improved Gold-washer:

I claim the combination of a water wheel with a separating or reducing machine into one apparatus, by using the inner space of a wheel partly or wholly inclosed as a receiver, dispensing in this manner with couplings or connections, and with a second vessel or receiver, which would have to be set in motion by the water wheel, substantially as and for the purpose described

26,525.—T. C. Roche, of New York City, for an Improved Stereoscopic Apparatus:

I claim, first, The employment of a skeleton wheel, D, substantially as described, for the purpose of bringing the pictures before the eye glasses.

Second, Placing the pictures, C, together back to back, and so that one is upright when the other is upside down, substantially as and for the purpose specified.

Third, In combination with the chain of pictures, C, I claim the arrangement of the sliding partition, G, and door, F, on the side and near to the bottom of the box, A, substantially as and for the purpose set forth.

26,526.—J. Hunter Sears, of Brantford, C. W., for an Improvement in Breech-loading Fire-arms:

I claim combining and applying the hinged breech-piece, D, and the breech screw, E, substantially as specified, so that the force applied to a lever attached to the screw may serve to first withdraw the screw and afterwards throw out the breech-piece as described.

[This invention consists in a novel construction of and mode of applying a movable breech, whereby very great facility for loading and a very tight and secure joint between the breech and barrel are obtained.]

26,527.—Josiah Seymour, of Coventry, N. Y., for an Improvement in Working Butter.

I claim the construction and arrangement of the tray to retain the fluids when desired, in washing and working over butter.

I also claim the manner of securing the tray to the platform or table, so as to be easily tipped up to drain off the fluids in cleansing, the detachable arch frame and rounded wedged shaped butter-worker for spreading thin while salting, all in combination as specified and for the purposes set forth.

26,528.—Geo. W. Slater, of New Haven, Conn., for an Improvement in Ship's Stoves:

I claim forming the joints, C D D, of the thimbles, b, and sockets, c, attached respectively to the swinging flue, a, stove, A, and stationary flue, C, substantially as and for the purpose set forth.

[This invention consists in hanging the stove by means of adjustable or independent thimbles, whereby said thimbles may be cast separately instead of with the whole flue as formerly, and perfect joints obtained as well as more durable ones, the invention also admitting of a more ready adjustment or fitting-up of the stove.]

26,529.—Ananias Smith, of Niagara Falls, N. Y., for an Improvement in Surface Condensers for Steam Engines:

I claim, first, The employment, in connection with a steam engine and its boiler, of a revolving bucket wheel, arranged to receive the exhaust steam from the engine, and made to rotate in a reverse direction to its issues in a cylinder or vessel containing water, from which the boiler of the engine is fed, the exhaust steam being condensed by direct impingement with and adding to said feed water, essentially as specified.

Second, The combination with the revolving bucket or wheel constructed to receive the exhaust steam from the engine and cylinder, or vessel containing the condensing liquid or feed water in which the wheel rotates, and by direct contact with which water the exhaust steam is condensed, in the manner described, of a surface cooling apparatus, formed by providing said feed-water vessel with a jacket or tubes, or their equivalents, through which a cooling liquid is made to pass or circulate, free from admixture with the water in the vessel, that directly effects the condensation of the steam, substantially as specified.

26,530.—Geo. Smith, of New York City, for an Improvement in Pipe-nippers:

I claim the combination with the slotted lever, A, of the movable claw, B, grooved pin, C, and holding spring, D, as shown and described, so that the claw may be readily removed from one side of the lever to the other, thus forming a right or left-handed instrument at pleasure, all as set forth.

[This invention consists in combining a hook or claw with a stock or lever, in such a manner that cylindrical articles may be grasped firmly and turned by the application of the implement, and the latter also, with one and the same claw or hook, made, by a very simple adjustment, capable of being applied to two different sized articles.]

26,531.—Nathan Spicer, of St. Paul, Minn., for an Improved Lever Escapement for Time-pieces:

I claim the combination of the two sets of teeth on the 'scape wheel and the single pair of pallets, or their equivalent, with two or more forks on the lever operating upon and operated upon by a single pin or cylinder attached to the balance; the whole operating substantially as set forth for the purpose specified.

26,532.—Henry Steinway, of New York City, for an Improvement in Grand Pianos:

I claim the arrangement of the strings, b b, of the lower notes and those, c c, of the higher notes of a grand pianoforte, substantially as shown and described.

26,533.—Oren Stoddard, of Busti, N. Y., for an Improved Device for Feeding the Bolt in Shingle Machines:

I claim the ratchets, j j, attached to the feed shafts, H H′, provided each with alternate long and short teeth, and operated by the pawls, k k, and slide, K, from the knife-gate or frame, E, in the manner specified.

[This invention relates to certain improvements in that class of shingle machines in which a reciprocating knife is employed for riving the shingles from the bolt. The invention consists, 1st, in so arranging the knife that the same may be made to operate with a straight cutter with more or less of a rolling cutting action, so that the cut may be regulated to suit the nature or character of the bolt as regards the direction of its grain, compactness, &c.; it consists, 2d, in a novel arrangement of the feeding device for presenting the bolt obliquely and automatically to the knife, so that the shingles will be rived from the bolt in taper form; it consists, 3d, in a novel arrangement of the knife, whereby the same is made to act more efficiently for the purpose intended than those of usual construction.]

26,534.—C. L. Maillant, of New York City, for an Improved Invalid Couch:

I claim the method of constructing an invalid couch, arranged and operating in the manner and for the purposes set forth.

26,535.—Robert N. Tate, of New London, Conn., for an Improved Mast-scraper:

I claim an implement or tool, composed of a steel plate, A, provided with one or more concave edges and attached to a suitable tang or handle, to form a new and useful article of manufacture, for the purpose set forth.

[The object of this invention is to obtain an implement that will facilitate the scraping of the masts of vessels without injuring or cutting the same during the operation. This work is at present performed with ordinary knives, and the operation is not only slow and tedious, but the masts are liable to be cut or scored in consequence of the comparatively straight edges of the knives acting against the convex surfaces of the masts.]

26,536.—Joseph Thorne, of New York City, for an Improvement in Sewing Machines:

I claim the specific arrangement of parts described for giving the appropriate motions to the needle bar and to the shuttle-driver.

26,537.—E. L. Pratt, of Philadelphia, Pa., for an Improvement in Thread Tensions for Sewing Machines:

I claim separating and holding the coil, B, at the openings through which the thread, E′, passes in and out from between it and its fellow, B, or support by means of the strips, D and D′, or their substantial equivalents, for the purpose of allowing a free passage of the said thread without causing friction on the openings, and for the better adjusting or changing the thread whilst the spring remains at the proper working tension, as described.

26,538.—G. Tigneres, of Covington, La., for an Improvement in Repeating Pistols:

I claim the rack, t′, and dog, u, in combination with a sliding trigger, when arranged and operated as or substantially as and for the purposes set forth.

I also claim, in combination with the plate, c, the arm, o, the bar, X, and the plate, a, when arranged and actuated on as described.

26,539.—John G. Treadwell, of Albany, N. Y., for an Improvement in Gridirons:

I claim the employment of the gauze wire screen, A, or its equivalent, the gridiron, C, and the cover, D, when the same are used, substantially as and for the purpose specified.

26,540.—Thos. Spur Whitman, of New York City, for an Improvement in Attaching Skates to Boots:

I claim uniting the skate iron to the sole of the boot or shoe, essentially in the manner and for the purposes stated.

[This invention will be found fully illustrated on another page of the present number.]

26,541.—H. Wilverth, of Caseyville, Ky., for an Improved Artificial Fuel:

I claim a compo ition formed by mixing the mentioned ingredients together, in the proportions and in the manner specified, for the purpose set forth.

[The object of this invention is to make use of those small pieces of al, generally termed "slake" and considered so entirely worthless, that they they can be obtained at the mere cost of transportation. By mixing them with certain ingredients, they are converted into a good and cheap fuel.]

26,542.—Edward Wirths, of New York City, for an Improve in Skate-fastenings:

I claim the mode of attaching the side pieces, B B, to the skate, A, for the purpose of adapting the same to feet of different sizes, when the same shall be arranged and operated as set forth.

26,543.—Robert W. Wright, of New Haven, Conn., for an Improvement in Machines for Feeding-up, Cutting and Pasting Directions on Newspapers, &c.:

I claim, in combination with a strip or fillet of paper, on which the names or addresses are equi-distantly arranged, an intermittent feed motion and a pasting, cutting and carrying device, working automatically together, substantially as described and represented.

26,544.—James R. Brown, of Boston, Mass., assignor to himself and J. Henry Norton, of Medford, Mass., for an Improved Pipe-cutter:

I claim, as a new or improved article of manufacture, the pipe-cutting instrument as constructed with the hinged and recessed jaws, the movable cutter, the adjusting screw, and the spring shank or shanks, extending from the jaws, and having a connection hook, or its equivalent, all substantially as specified.

26,545.—Thomas H. Burridge (assignor to himself and Thomas W. Ustick), of St. Louis, Mo., for an Improvement in Printing Presses:

I claim the direct application of steam power to the type table of a printing press, and in causing the same piston that actuates the said table to arrest the momentum thereof, substantially as described.

26,546.—Lewis S. Chichester (assignor to H. G. Evans), of New York City, for an Improvement in Cotton-packers:

I claim pressing cotton and other fibrous substances into sacks, H, by placing the same on a hollow cylinder, G, fitted over an aperture of corresponding diameter in the flooring, A, and having clamps, I I, bearing or pressing against the sack on the cylinder, and so arranged as to allow the sack to render or give over the cylinder under the pressure of a plunger, D, while pressing the substance into the sack, substantially as described.

26,547.—Homer H. Dikeman (assignor to Ira Dikeman & Son), of New Haven, Conn., for an Improvement in Shifting Tops for Wagons:

I claim the shifting slide or curt in rail, in combination with the jointed bows, when the whole is constructed, connected, and made to serve the purposes designed, substantially as described.

26,548.—W. D. Hall (assignor to the Quinnissiac Company), of Hamden, Conn., for an Improvement in Fertilizers:

I claim preparing concentrated artificial manure by boiling fish in common fresh water, until the whole is thoroughly cooked, then removing it from the vessel, and when sufficiently drained, sprinkling on it from one to three per cent (usually about two per cent) by weight of sulphuric acid, mixing thoroughly, and drying by solar or artificial heat when the whole is effected substantially in the manner and by the process described.

26,549.—B. F. Lee (assignor to the New York Rubber Company), of New York City, for an Improvement in India-rubber Belting:

I claim, as a new and useful article of manufacture, the combination belting or banding specified, and consisting of two or more thicknesses or layers of fibrous material, cemented and quilted together, substantially as set forth.

26,550.—Frederick Mathushek (assignor to himself and Wellington Wells), of New York City, for a Pianoforte Action:

I claim the combination of the auxiliary jack, A D, the regulating screws, E F and J, the improved hammer butt, G, and improved arrangement of the spiral spring, J, with the French action, arranged substantially as set forth.

26,551.—D. D. Parmelee, of Salem, Mass., assignor to J. A. Greene, of Beverly, Mass., for an Improvement in Manufacture of India-rubber Hollow Molded Articles:

I claim making hollow articles of india-rubber, or its equivalent or their compounds, when the same are to be treated in the cold way, after molding to effect the change, as described, by shaping the articles in molds from bags formed of such rubber, and exhausting the air from between said molds and the bags, substantially as set forth.

26,552.—Sylvanus Walker, of Boston, Mass., assignor to D. W. Smith, of Somerville, Mass., for an Improved Boot Strap-fastener:

I claim the above-described boot strap-fastener, consisting of the plate or shield, C, and hollow rivets or eyelets, B, substantially as described.

EXTENSION.

Calvin B. Rogers, of Saybrook, Conn., for an Improvement in Machinery for Dressing Combs. Patented Dec. 20, 1845:

I claim the manner in which I have arranged the apparatus for carrying the plates between the cylinders, consisting of the box, B, the slide, N, with its piece, and the wheel, C, connected by the rod S, to the slide N, and to the shaft, D, by the small wheel, c i, and the gripe, A A, heretofore described and seen in Figs. 1 and 3, operating substantially as before stated.

I claim the manner in which I have arranged the top bed, G, whereby plates varying in thickness are equally scraped, not reducing the thickness of one more than another, said arrangement consisting of the spring, S′, as seen in Fig. 5, and the position of said bed with its space, A B, as seen in Fig. 7.

I claim the manner in which I have arranged the chisels for scraping, smoothing and shaping the plate, said arrangement consisting of the levers, J and J a, the crosspieces, L L, and the apparatus for securing the chisels to the crosspieces seen at P, i, Fig. 8, and for securing the crosspieces to the levers, as seen at n n n n, Fig. 1, or at H H, Fig. 8, and for the movement up or down for the same by the screws as seen at L i L i, Fig. 8.

I claim the manner in which I have arranged the box F to receive the plates from the top bed G, consisting of the spring, L, on the under side of the lid seen in Fig. 6, and the bed with its tapering rod, x i, clasped by the springs, r r, under the said box, operating as before stated.

And I hereby declare that I do not intend by these claims to limit myself to the exact form or arrangement of the respective parts and combinations as described and represented; but to vary those as I may deem expedient, while such arrangement and combinations are substantially the same with those made known.

RE-ISSUES.

D. M. Cook, of Mansfield, Ohio, for an Improvement in Pans for Evaporating Cane Juice. Patented June 22, 1858·

I claim, first, The combination with a fire furnace of a sugar evaporating pan, when said pan is constructed and arranged so as to allow of a continuous circulation of the sirup in an indirect course over its surface, during the process of boiling, substantially as and for the purposes set forth.

Second, So arranging the pan on the furnace, that a portion of its bottom surface near each side shall not be exposed to the direct heat of the furnace, and thus while the intermediate surface of the bottom of the pan is intensely heated, the other portions remain comparatively cool, substantially as and for the purposes set forth.

Third, Retarding the escape of the sirup, or facilitating its escape, either by giving the pan a vibrating motion, or a greater or less inclination, substantially as and for the purposes set forth.

Fourth, An evaporating apparatus which allows of a circulation of the stream of sirup, boils it at the center of the pan and cools it at the sides of the same, and afford facilities for regulating the flow of the steam, substantially as and for the purposes set forth.

[This invention consists in boiling sugar juice while in motion or circulating, so as to avoid scorching. The apparatus employed gives the flowing stream of sugar juice an indirect circulation, boils it at the center of the pan, and cools it at the sides of the same, and thus ensures a perfect boiling, causes a deposit of the scum and feculent matter, and allows of the same being conveniently removed. Every facility for retarding or increasing the flow of juice is obtained, and the whole apparatus, with furnace attached, is portable. This is a very valuable invention.]

Erastus Stebbins, of Chicopee, Mass., for an Improvement in Stop Cocks. Patented April 19, 1859:

I claim the arrangement and combination of the collar, I, flexible washer, H, washer, G, as and for the purpose described.

Second, The chambered square nut or valve, when its seat is formed in the body of the cock in the manner substantially as and for the purpose described.

Wm. L. Williams, of New York City, for an Improved Machine for Splitting Firewood. Patented April 19, 1859:

I claim, first, Feeding the wood to be split, by the endless chain, I I, when so arranged that the chain can receive a lateral movement, for the purposes and as specified.

Second, In combination with the endless chain to feed the wood as aforesaid, I claim the rollers, j j, for permitting a lateral movement and taking up any slack, as set forth.

Third, I claim the yielding pawls, h″ h″, in combination with the feeding chains, I I, for permitting backward movement to the wood as the knife enters the same, thereby preventing the wedging of the wood or injury to the parts, as set forth.

Fourth, I claim the spurs, i′, to give lateral motion to the chain, I I, in combination with the arms, d′, and yielding connection to the rods, b′ b′, as described and shown.

Fifth, I claim the yielding end pieces, l l, to regulate the delivery and sustain the wood while being split, and prevent the same falling over before being separated by the second cut, as specified.

DESIGNS.

O. T. Bragg and M. Burrowe, of St. Louis, Mo., for a Design for a Trade-mark.

Thos. Lincoln and Saml. Lincoln, of Providence. R. I., for a Design for a Trade-mark for Soap-boxes.

Jeremiah Meyer, of New York City, assignor to Alden Sampson, of Manchester, Maine, for a Design for Floor Oilcloths, Carpets, &c.

E. J. Ney (assignor to the Lowell Manufacturing Company) of Lowell, Mass., for a Design for Carpets, &c. (2 cases).

Garrettson Smith and Henry Brown (assignors to J. G. Abbott), of Philadelphia, Pa., for a Design for Parlor Stoves.

H. G. Thompson, of New York City, assignor to the Hartford Carpet Company, of Hartford, Conn., for a Design for Carpet Patterns. (5 cases.)

© 1860 SCIENTIFIC AMERICAN, INC.

Notes & Queries

L. L. G., of N. Y.—To obtain a suitable clock oil that will not congeal, agitate in a bottle some of the best sperm oil, or what is better, poppy oil, with one-fourth its weight of alcohol, when a sediment will fall to the bottom. The clear which is left is the oil—mostly glycerine—which is suitable for clock-work.

H. N. M., of Del.—We do not think that graphite paint would be suitable for your cement cistern, to contain the chloride of lime. As the cistern leaks badly, the only safe mode for you now to pursue is to give it another coat of cement on the interior, and allow it to "set" perfectly before you introduce the bleaching-powder.

A. H. B., of Va.—You state that some red flannels poison the skin, causing it to break out into boils, and that a number of persons in your neighborhood have been infected in this manner, and you wish to know what will remove the poison. There is no virus in the color of the common red flannel which should produce such effects. It is dyed with lac and the hydro-chlorate of tin, and is washed thoroughly before being made up for market. By boiling white or red flannel for one or two hours in soft water before it is worn, any infectious matter contained in it will be destroyed by the high temperature, and the boiling action will also prevent the wool "fulling up" afterwards when washed. We do not propose any remedy for the cutaneous disease referred to, except sponging the infected parts with warm vinegar—an old and excellent remedy, too much neglected at present.

H. G., of Pa.—Upon proceeding to examine your rejected case at the Patent Office, we found that your former agent had, by virtue of a power-of-attorney, which you probably unwittingly signed, withdrawn the application, and pocketed the $20. This leaves you no other alternative but to begin anew. We repeat our caution to all inventors not to sign away their right to any agent to withdraw the $30; then they will be safe against such sharp practice, which is but too common. An agent of integrity does not care a straw for authority to simply withdraw from the Treasury the $30 returnable on rejected cases. If he has that authority, he will not abuse it; but it affords him no advantage whatever in the successful prosecution of the case. A few "fellows of the baser sort" may squirm under this advice; but all reputable agents will understand our remarks as in no way reflecting upon their relations with their clients. Our purpose is to protect inventors against wrong-doers.

B. H. M., of N. H.—We have not the honor of an acquaintance with a single manager of a circus or menagerie company, and cannot advise you of the best mode to pursue in getting access to them.

I. S. C., of Tenn.—The arrangement you propose "to obviate the lifting of back-water, common to paddle wheels now in use," does not suggest a proper remedy for the supposed difficulty. What you would gain by changing the position of the buckets, as they leave and enter the water, would be more than lost by the immense amount of friction caused by the gearing which you propose to employ. More than this, however, your plan is not new.

A. I. B., of Ky.—We wrote to you several days ago that we had succeeded in securing a patent for your wrench. Our letter you have doubtless received before this. In reference to that fungus: when we inquired as to the probable amount of whittling done in the case, we did not design to imply anything against your in integrity the matter. Our object was to start a searching inquiry into all the facts of the case.

S. B. S., of Vt.—Fulton's first trip in a steamboat on the Hudson was made on August 7, 1807.

S. C. S., of Ind.—The "gyroscope" is no paradox or mystery; all its motions result from the single property of inertia. A body revolving in any plane is held by inertia in the plane of its revolution, and can be removed from it only by a force proportioned to the momentum of the revolving body. The reasen why a top, thrown to the floor while rotating rapidly, travels round in a spiral track, we suppose to be that the end of the spindle has an appreciable size, and acts as a wheel; and as the property of inertia, acting in a manner similar to its action in the gyroscope, causes the top to assume an upright position, the spindle turns in constantly-decreasing circles, giving the spiral form to the track.

McG., of C. E.—In Vol. II., of the SCIENTIFIC AMERICAN, we published a tubular connection for carrying off smoke and cinders backwards to the rear of the train. It is, in its general characteristics, precisely like your plan.

E. S. B., of N. Y.—We do not think you have any encouragement to proceed with your rocking-horse. The one you refer to is a full anticipation of your plan.

L. B., of Ohio.—The cheapest mode of preserving the beams of your ground floor from rotting is by charring their surfaces or putting on a coat of coal tar. A concrete floor of hydraulic cement and gravel would be the best you could put down; but you say it would be too expensive. By painting your sleepers with graphite paint, their durability will also be greatly increased.

H. P. B., of Pa.—There is a good article on the art of bleaching in the "New American Encyclopœdia." There is no work on calico printing published up to the practice of the present day; but "Parnell's Chemistry," published in London some years ago, is very good authority for all colors requiring mordants. We do not know its price.

S. M., of Ohio.—The cheapest method of insulating telegraph cables is with a coat of gutta-percha. To our knowledge, there is no thorough work on electro-magnetism published. It will be much cheaper to have your propeller turned in Sandusky than sent to this city. Communicate with J. B. Kitching, corner of Duane and Hudson-streets, this city; state the power of Ericsson engine you want, and he will tell you the price.

W. L. B., of Vt.—The turbine wheel to which you refer, that was to be driven by a stream of water forced through it by a steam engine, and that had its origin in Newark, N. J., is "non est inventus."

L. F., of N. Y.—For a horizontal dial—that is, one in which the plane of the dial is parallel to the horizon—the style or edge which casts the shadow must be parallel to the axis of the earth; in other words, must point exactly to the pole of the heavens. Thus, the angle which the style makes with the plane of the dial corresponds with the latitude. The angles of the hour lines may be computed from this theorem: as is the radius to the sine of the latitude, so is the tangent of the hour from noon (reckoning 15° to the hour) to the tangent of the hour angle from the center. We give you these angles for latitudes 42° and 43°:—

Morning.	Afternoon.	42°.	43°.
XI.	I.	10° 10′	10° 21′
X.	II.	21° 7′	21° 29′
IX.	III.	33° 47′	34° 18′
VIII.	IV.	49° 13′	49° 45′
VII.	V.	68° 11′	68° 33′
VI.	VI.	90°	90°

We know of no small work on the subject of dials.

W. T. M., of Ala.—The best way to treat new iron wire to prevent it from rusting, is to steep it in hot linseed oil for a few hours; then take it out and allow it to dry perfectly before it is put up. The oil, when it becomes dry, forms an impenetrable varnish. As your wire is already put up in trellis-work, and is now rusting fast, the best way for you to treat it is to go over it with a cloth dipped in hot oil, drawing the wire between the cloth through your hand. The oil will unite with the rust, and form a durable dark-red paint; and, by the mode described, you can apply the oil quickly and equally to all sides of the wire. At the joints, you may have to use a brush for the oil.

M. D. D., of N. Y.—Ground quartz obtained from white sand, if boiled for a considerable period in a strong caustic lye made from carbonate of soda and lime, will be dissolved, and form what is called "soluble glass," "liquid flint," &c. It is a soluble composition, and is unfit for being usefully applied to surfaces of buildings exposed to rains. The method of liquifying quartz, so as to have it in excess (instead of an excess of alkali), as described in our columns a few weeks ago, is done, by a peculiar apparatus, at the works of Mr. Hardinge, near this city. The quartz is dissolved by very intense heat, and the liquid is not soluble. It is therefore applicable as cement, and well adapted for outside work.

T. R., of Texas.—We have never stated that an explosive gas was generated in steam boilers on account of the absence of hydrogen gas; such a result could not take place. Your practice of frequently stopping the water supply and allowing the pump to force in air for three or four hours on a stretch is dangerous; because, if hydrogen is ever generated in the boiler by the water becoming too low and the plates red hot, the air will furnish some oxygen to unite with the hydrogen and cause an explosion. You ought always to keep the feed pump moving with water, however small the quantity required; this is the safe mode.

H. H. B., of N. J.—You say: "Load a five-horse power steam engine so that it can make only ten revolutions per minute, with 50 lbs. per inch pressure; then apply water in place of steam, with the same amount of pressure, will it not give the same amount of power? Will not the slow speed of the engine give the water time to operate its full power on the piston head?" We answer: The slower the speed the nearer, of course, will water come to equaling the power of steam. Still, there is a difference, theoretically, and we presume there would be in practice. The flow of the water is not so rapid through the ports, and as it would take more pounds of water to fill the cylinder than of steam, the inertia of the water would be greater, and it would start more slowly at each stroke; from the same reason, also, its flow into the cylinder would require to be stopped more gently by a slower closing of the valves.

O. P. T., of N. Y.—It is difficult to remove lamp oil from white marble after it has once become dry. Strong soap suds and alcohol will remove some of it from the surface; but if the oil has been colored, the stain is liable to remain. Another method is sometimes effectual, viz., take some soapstone dust and place it on the top of the oil stain, then lay a sheet of blotting paper over it, and on the top of this a warm flat iron—not too hot. Allow the iron to remain until it is cool; heat it again, place it on the marble, and do the same two or three times, when the heat will penetrate to the marble and warm the oil, which will then be absorbed by the dust. When polished marble table tops have been wet with water or any other liquid, they should be rubbed afterwards with some fine whiting and a smooth piece of cork to restore the polish; and lastly, they should be wiped with a piece of silk or soft buff leather.

A. G., of Pa.—Several devices have been employed for obviating the dead points in the crank movement of a steam engine, so as to dispense with a fly-wheel, but they all proved to be greater evils than those they were designed to remedy. The disks of chain pumps have been packed with rings of leather and india-rubber for the purpose of working tight in the tube and preventing the water flowing back, so as to have the water always at the spout when commencing to draw. An elastic tube has also been employed to effect the same object, and a patent was granted for such an arrangement to E. Morris, of Burlington, N. J., on Feb. 10, 1857.

Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Dec. 24, 1859:—

G. L., of N. Y., $30; N. L., of Conn., $20; B. L. F., of Pa., $30; J. R. E., of La., $30; F. D., of Conn., $30; A. B., of N. Y., $30; F. B., of N. Y., $32; H. L. C., of Tenn., $30; J. S. S., of Pa., $30; C. W., of N. J., $30; A. G. M., of N. Y., $25; R. W. J., Jr., of R. I., $30; E. A. S., of Pa., $25; R. S. S., of Pa., $55; J. M. C., of N. Y., $250; C. A. S., of N. J., $5; J. F., of Ky., $25; G. L. S., of N. Y., $30; S. C., of Mass., $25; G. M. B., of N. Y., $30. W. G. C., of N. Y., $275; M. A. H., Jr., of Ill., $30; T. M., of N. Y., $25; E. B., of N. Y., $25; L. B., of Cal., $250; D. S. H., of R. I., $45; C. W. B., of Fla., $10; O. C. K., of Pa., $15; W. McC. of N. Y., $25; C. B., of Mass., $35; P. C. C., r., of N. H., $30; W. H. G., of N. H., $30; K. & S., of N. Y., $30; M. R., of N. Y., $55; P. A., of N. Y., $30; D. D. S., of N. J., $25; C. J. Van V., of N. Y., $30; L. & B., of Mich., $25; J. A., of La., $10; I. G. I., of Ohio, $30; Y. O. & J. R. S., of Pa., $30; G. K., of N. Y., $25; M. A. H., of N. Y., $30; W. A. P., of Vt., $30; A. C. B., of Pa., $30; C. M. S., of Conn., $30; J. C., of Conn., $30; W. S. & Co., of Ohio, $40; G. N. & G. M., of Conn., $25.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 24, 1859:—

D. S. H. of R. I.; W. H. G. of N. H.; S. C. of Mass.; C. A. S. of N. J.; E. A. S. of Pa.; J. B. M. of N. Y.; A. G. M. of N. Y.; J. W. N. of Russia; D. D. S., of N. J.; O. H. of N. Y.; O. C. K. of Pa.; J. R. G. of N. Y.; W. B. B. of N. Y.; T. M of N. Y.; E. B. of N. Y.; P. C. of N. Y.; T. C. R. of Wis.; M. P. W. of R. I.; G. E. H. of N. Y.; E. P. of Pa.; G. N. & G. M., of Conn.; C. H. D., of Mich.; L. & B., of Mich.; M. A. H., of N. Y.; W. S. & Co., of Ohio.

Literary Notices.

THE QUARTERLY REVIEWS.—Leonard Scott & Co., No. 54 Gold-street, publishers. At the commencement of a new year, a favorable opportunity is presented to subscribe for the "Westminster," "Edinburgh," "North British" and "London" reviews—the ablest in the English language, and re-published from advanced sheets. The last number of the "London Review" contains an article on "Trade Strikes," which is the best we have ever read on the subject. The subscription price of the four reviews and "Blackwood" is $10 per annum; in England the price is $21.

A TALE OF TWO CITIES.—We have received from Messrs. T. B. Peterson & Bros., of Philadelphia, a copy of this, the latest work of Charles Dickens. We are prepared to say—having read this story as it appeared in a weekly journal—that it is one of the best efforts of its ingenious author. It can be procured in this city of Dick & Fitzgerald. Messrs. Peterson are the publishers of Dickens' entire works.

BOOKS FOR THE YOUNG.—Nothing can be more gratifying to the Christian, the philanthropist and the patriot than the great care and attention which is now being paid to books and serial publications for the young. The shelves of our respectable book stores are well filled with interesting reading for the little folks at home; and on the holidays, what more appropriate gift for them than a good book? We have received from Messrs. Brown, Taggard & Chase, Boston, three books, entitled "Pictures from the History of the Swiss;" "Our Summer House, and what is said and done in it;" "The Life of Whitenose Woodchuck," by Uncle Fannus, a humorous story; well illustrated. These interesting books can be procured from Messrs. Sheldon & Co., No. 115 Nassau-street, this city.

HINTS TO OUR READERS.

VOLUME I., BOUND.—Persons desiring the first volume of the New Series of the SCIENTIFIC AMERICAN can be supplied at the office of publication, and by all the periodical dealers. Price, $1.50; by mail, $1.60. The volume in sheets, complete, can be furnished by mail. Price $1.

BINDING.—We are prepared to bind the volume, just closed (Vol. I., New Series) in handsome muslin covers, with illuminated sides, and to furnish covers for other binders. Price for binding, 50 cents. Price for covers by mail, 50 cents; by express, or delivered at the office, 40 cents.

INVARIABLE RULE—It is an established rule of this office to stop sending the paper when the time for which it was prepaid has expired, and the publishers will not deviate from that standing rule in any instance.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within 14 years can obtain a copy by addressing a note to this office, stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

INVENTORS SENDING MODELS to our address should always enclose the express receipt, showing that the transit expenses have been prepaid. By observing this rule we are able, in a great majority of cases, to prevent the collection of double charges. Express companies, either through carelessness or design, often neglect to mark their paid packages, and thus, without the receipt to confront them, they mulct their customers at each end of the route. Look out for them!

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money inclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

SUBSCRIBERS to the SCIENTIFIC AMERICAN who fail to get their papers regularly will oblige the publishers by stating their complaints in writing. Those who may have missed certain numbers can have them supplied by addressing a note to the office of publication.

Rates of Advertising.

THIRTY CENTS per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement sent for publication.

FOR THE DEAF.—FOR THE DEAF.—FOR THE DEAF.—Artificial ears. Entirely concealed. Call at, or address HASLAM BROS., No. 429 Broadway, New York, for a descriptive and illustrated circular. 1*

FOR SALE—AN 8-HORSE UPRIGHT STEAM engine, boiler, smoke-pipe, &c. All in good running order. Apply to H. B. MATHER, West Norwalk, Conn. 1 8*

TO MATCH MANUFACTURERS.—BROWN Deutoxyd of lead for sale in quantities and by the pound, by FERD. F. MAYER, No. 26 Beekman-street, up stairs, New York. 1 2*

CONJURING.—THE WHOLE ART OF CONjuring made easy, with full directions for performing 150 of the most wonderful and astounding feats of hocus-pocus, sleight-of-hand, ventriloquism and legerdemain. Profusely illustrated. Price 15 cents; sent postpaid. Address M. M. SANBORN, Brasher Falls, N. Y. 1 2*

FOR SALE—TWELVE VOLUMES OF THE SCIENTIFIC AMERICAN, from Vol. III. to Vol. XIV., inclusive, bound, and in good order. Price $2 per volume. Address PATRICK MASTERSON, corner of Dove and Dorchester-streets, South Boston, Mass. 1*

THE PRACTICAL HAND-RAILER, OR HAND-RAILING SIMPLIFIED AND MADE EASY.—By H. C. Coen (deceased), architectand builder. Less lines than in any other work yet published, and a saving in labor and material of at least 50 per cent. Sent by mail free at the reduced price of $3. Address FRANKLIN COEN, box 411 Post-office, Wheeling, Va.

The opinion of G. W. Moore, of Wellsburg, Va.:—"Its simplicity, with many other advantages, recommend it to every builder, carpenter, &c., in the country. It is truly a work to supply the great wants of the mechanic." 1 2*

© 1860 SCIENTIFIC AMERICAN, INC.

THE SECRET OUT; OR 1,000 TRICKS WITH CARDS.—By the author of "The Sociable," "The Magician's Own Book," "Parlor Theatricals," &c. Large 12mo., cloth, gilt side and back. Price $1. A book which explains all the tricks and deceptions with playing cards ever known or invented, and gives, besides, a great many new and interesting ones; the whole being described so accurately and carefully, with engravings to illustrate them, that anybody can easily learn how to practice these tricks. This book contains, in addition to its numerous card tricks, above described, full and easily understood explanations of some two hundred and forty of the most curious, amusing and interesting sleight-of-hand and legerdemain tricks ever invented, and which are illustrated by engravings, to make each trick understood with ease. As a book for a holiday present, it cannot be surpassed; being printed in the finest manner, illustrated by about 300 engravings, and bound in a handsome gilt binding. It contains about 400 pages, and the price is One Dollar per copy. For sale by all booksellers. Single copies sent by mail, postpaid. Send cash order to DICK & FITZGERALD, No. 18 Ann-street, New York. 25 2

WANTED—VOLS. I., II. AND III. OF THE SCIENTIFIC AMERICAN. C. A. SHAW, Biddeford, Maine. 25 4*

ALEX. STOCKMAR, MACHINIST, NO. 161 Duane-street, New York. Inventors' models and sewing-machines. 25 12*

WILLIAM E. RICE, HOLYOKE, MASS., MANUfacturer of Cast Steel Wire, drawn uniform in size and of extra quality, for needle makers; also Steel Crinoline Wire and Refined Iron Wire of all sizes and for any use. 25 6*

PORTABLE STEAM-ENGINES, COMBINING the maximum of efficiency, durability and economy with the minimum of weight and price. They received the large gold medal of the American Institute, at their late fair, as "the best Portable Steam-engine." Descriptive circulars sent on application. Address J. C. HOADLEY, Lawrence, Mass. 25 13*

FOR SALE — A LARGE AND VALUABLE Punching and Shearing Machine; weight, 25,000 lbs.; second-hand, and in perfect order. Description and photograph, with price and terms, sent on application. Address J. C. HOADLEY, Lawrence, Mass. 25 8*

THE BUILDING NEWS—A WEEKLY JOURnal for the Builder, Architect and Dealer in Real Estate; $2 per annum. Published by JOHN HILLYER, 120 John-street, New York. 1*

GREAT CURIOSITY. — PARTICULARS SENT free. Agents wanted. SHAW & CLARK, 24 3* Biddeford, Maine.

OIL! OIL! OIL!—FOR RAILROADS, STEAMers, and for Machinery and Burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This Oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The SCIENTIFIC AMERICAN, after several tests, pronounces it "superior to any other they have ever used for machinery." For sale only by the Inventor and Manufacturer, F. S. PEASE, No. 61 Main-street, Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 14 13

HOMINY MILLS.—THE UNDERSIGNED IS manufacturing Fahrney's Improved Self-feeding, discharging and Separating Hominy Mill. For mills or rights, address 19 11* J. DONALDSON, Rockford, Ill.

5,000 AGENTS WANTED—TO SELL FOUR new inventions. Agents have made over $25,000 on one—better than all other similar agencies. Send four stamps and get 80 pages particulars, gratis. EPHRAIM BROWN, Lowell, Mass. 17 13*

FOR SALE OR TO RENT—ON MOST FAVORable terms, an Agricultural Foundry and Machine Shop, in good working order, having a well-established business and requiring a small capital. Address E. J. BURRALL or H. C. SCHELL, Geneva, N. Y. 28 4*

IRON PLANERS, ENGINE LATHES, AND OTHER Machinists Tools, of superior quality, on hand and finishing, and for sale low; also Harrison's Grain Mills. For descriptive circular, address New Haven Manufacturing Co., New Haven, Conn. 14 13

NEW YORK MACHINERY DEPOT.—MILBANK & ANNAN (successors to A. L. Ackerman), manufacturers and dealers in Woodworth Planers, Wick's Patent Re-sawing Machinee; Sash, Door and Blind Machinery, Steam-engines and Boilers, Machinists' Tools, Files, Leather and Rubber-belting, and findings of every description, No. 223 Pearl-street, New York. 9 24*

THE FOLLOWING VILLAGE GAS-WORKS ARE now erecting under the Aubin system, viz.:—For the city of San Antonio, Texas; for the villages of Bath, N. Y.; Plattsburgh, N. Y.; Gloversville, N. Y. (changed from rosin works); Rutland, Vt.; Dover, Del.; Jersey Shore, Pa.; Flemington, N. J.; Greensboro, N. C.; and Point Levi, Canada. For reference to the Aubin village works erected last year and this spring, where both consumers and stockholders are satisfied, apply to the Aubin Company, No. 44 State street, Albany, N. Y. 15 12

MAPES' AGRICULTURAL IMPLEMENT AND Seed Warehouse, Wholesale and Retail. All improved and standard varieties of Agricultural Machinery and Implements. Orders from correspondents promptly attended to, and special attention given to low contracts for freight. CHARLES V. MAPES, 24 tf 128 and 130 Nassau and 11 Beekman-streets, New York.

ALFRED MARSH & CO., 241 BROADWAY, New York—Engineers and Contractors for the erection of Coal or Rosin Gas-works; Proprietors and Manufacturers of Marsh's Patent Rosin or Sunlight Gas-works, patented 1858 and 1859 in the United States, Canadas and Europe. These works are the only ones in existence that can be operated any length of time, continuously, without opening the retorts, and without the least deposit of carbonaceous matter either in the retorts or pipes; producing the cheapest and best illuminating gas. See SCIENTIFIC AMERICAN, page 224, Vol. 1. 20 7*

WOODWORTH PLANERS—IRON FRAMES TO plane 18 to 24 inches wide, at $90 to $110. For sale by S. C. HILLS, No. 12 Platt-street, New York. 1 tf

IMPORTANT TO INVENTORS!!—OUR FACILIties for negotiating the sales of patents are second to none in the United States. Our exhibition rooms are visited daily by capitalists, tradesmen, and those seeking to invest in patents. Those who are not already familiar with our locality and facilities to sell patents, are requested to send for a circular. S. A. HEATH & CO., 1* No. 37 Park-row, New York.

GAS COOKING STOVES—EVERY VARIETY for family purposes, using the common cooking utensils. Families of two persons are cooking for five cents per day. Address Dr. H. B. MUSGRAVE, Cincinnati, Ohio. 1*

PATENT EXTENSIONS.—ALL PATENTS FOR Inventions, granted by the United States during the year 1846, will expire by their own limitations during the current year (1860) UNLESS EXTENDED ACCORDING TO LAW. The statute provides for the extension of Patents for an additional term of SEVEN YEARS, the grant being made to the inventor himself, or if deceased, to his heirs and administrators. The EXTENDED TERM inures solely to the benefit of the inventor or his heirs. Assignees or owners of rights under the first term of the Patent have no rights whatever in the extended term. The inventor or his heirs may, however, sell their interests in the Extension prior to the grant thereof, in which case the Extended Patent, when granted, becomes the exclusive property of such purchaser. Applications for Extensions must be made at the Patent Office at least 65 days prior to the extension of the Patent. The undersigned, having had great experience in Patent business, will promptly prepare the various documents and prosecute Extension cases on moderate terms. For further information address MUNN & CO., Solicitors of Patents, No. 37 Park-row (Scientific American Office), New York.

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The Hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, 14 13 Nos. 37 and 38 Park-row, New York.

BOILER FLUES FROM 1 1-4 INCH TO 7 INCHes outside diameter, cut to any length desired, promptly furnished by JAMES O. MORSE & CO., 7 tf No. 76 John-street, New York.

GUILD & GARRISON'S STEAM PUMPS FOR all kinds of independent Steam Pumping, for sale at 55 and 57 First-street, Williamsburgh, L. I., and 74 Beekman-street, New York. 14 13 GUILD, GARRISON & CO.

WROUGHT IRON PIPE, FROM ONE-EIGHTH of an inch to six inches bore; Galvanized Iron Pipe, (a substitute for lead.) Steam Whistles, Stop Valves and Cocks, and a great variety of Fittings and Fixtures for Steam, Gas, and Water, sold at wholesale and retail. Store and Manufactory, No. 76 John-street, and Nos. 29, 31 and 33 Platt-street, New York. 7tf JAMES O. MORSE & CO.

JUST PUBLISHED.—ENGINEERING PRECEDENTS for STEAM MACHINERY. By B. F. ISHERWOOD, Chief Engineer of United States Navy. Vol. I., Screw propellers, &c., illustrated, $1.25; Vol. II., Boilers, &c., with seven plates, $3.50. BAILLIERE BROTHERS, Publishers, No. 440 Broadway, New York. 1 8*eow

STEAM ENGINE FOR SALE.—HORIZONTAL, five-feet stroke, fifteen-inch cylinder, upright boiler; adapted to wood fuel; but little used. Will be sold on very moderate terms for cash or approved paper. For particulars address E. N. LESLIE, Skaneateles, N. Y. 1 4*

THE UNDERSIGNED, NOT BEING POSSESSED of sufficient means to get his improvement on the upright tubular boiler patented, will sell it unpatented. Address THOMAS BANTA, Haverstraw, Rockland county, N. Y. 1*

PROOF IMPRESSIONS, ON TINTED PAPER, of the Machinery at the Fair of the American Institute, as represented by the engraving published in the SCIENTIFIC AMERICAN, may be obtained on application to WATERS & TILTON, No. 90 Fulton-street, New York. Price, 50 cents each. 1 3

PLATE GLASS.—TO MANUFACTURERS OF GLASS.—Having purchased the patent right for machinery to turn rough plate into polished plate glass, I request parties able to produce rough plate of a quality desirable for such purpose, to send prices for cash and samples showing the color. The quantity required would be 10,000 square feet and upwards every month. WILLIAM H. HORSTMANN, No. 13 South William-street, New York. 1 2*

WANTED—AN EXPERIENCED WORKMAN, to make sewing machines needles. Address W. H. S., box 135 Birmingham Post-office, Conn. 1 2*

FOR SALE OR RENT—A SUBSTANTIAL FOUR story brick factory, 70 by 31 feet, with steam engine and boilers (20-horse power), nearly new; a wharf and large river front on the Delaware, together with seven dwelling houses, stable, storehouse, &c.; is situated three miles from Camden, opposite Philadelphia. Apply to SAMUEL ROSS, Camden, N. J. 1 2*

PATENT MACHINERY AGENCY.—PARTIES securing patents for any article would do well to address us by letter. Patents purchased in whole or in part, or articles patented sold on commission. THOS. J. SPEAR & CO., box S., Post-office, or No. 137 of 177 Canal-street, New Orleans, La. 1 4*

MILLER & SAWYERS SELL PATENT RIGHTS on commission. Address Memphis, Tenn. 1 2*

ART OF DYEING.—100 RECEIPTS, FULL DIrections, 40 pages; mailed, postpaid, for 25 cents, stamps or cash. Address DANIEL CONGER, Wolcott, Wayne county, N. Y. 1 2*

FOR SALE, WITH IMMEDIATE POSSESSION— an agricultural foundry and machine shop; 10 years established. For particulars, apply to J. W. & N. GREEN, Waterford, Norfolk county, C. W. 1 7*

CHRONOMETERS, FINE WATCHES, NAUTICAL AND ASTRONOMICAL INSTRUMENTS, &c.—D. EGGERT & SON, No. 239 Pearl-street, New York, offer on favorable terms first-class Marine, Sidereal and Pocket Chronometers; also, plain and finer quality of Watches, with new series train, so thoroughly adjusted as to be unaffected by any change of temperature exercise or position in the pocket; Astronomical Clocks, Transit Instruments, Standard and Self-Registering Thermometers, Barometers, &c. 1 13eow*

MACHINERY.—S. C. HILLS, NO. 12 PLATTstreets, New York, dealer in Steam-engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Mortising, Tenoning and Sash Machines, Woodworth's and Daniel's Planers, Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 2 e3w

Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu adressiren an

Munn & Co.,
37 Park Row, New-York.

Auf der Office wird deutsch gesprochen.

PORTER'S CENTRIFUGAL GOVERNOR.—PATented July 13, 1858; re-issued June 21, 1859.

New York, Dec. 8, 1859.

MR. PORTER:—Dear sir: Our engine, before your governor was applied, was subject to constant variations of speed, but during the four months that it has been attached, has been a marvel of regularity. The extreme changes of load do not produce a momentary variation exceeding one revolution in one hundred. Though the governor is sensibly affected by changes of speed of less than one revolution in five hundred, it never oscillates, but stands nearly motionless when the load is uniform. Any one is welcome to call at our Champion Safe Manufactory, corner of Ninth-avenue and Fourteenth-street, and see that these statements are within the truth. We have not had to touch the governor since it was put up.

Yours, S. C. HERRING & Co., No. 251 Broadway, New York.

A new testimonial will appear in this place each week. Every governor is warranted to maintain a speed so nearly uniform that the eye cannot detect any variation. Orders promptly supplied; valves furnished. A liberal discount allowed to agents and to engine builders. Send for a circular.

CHARLES T. PORTER,
1 No. 225 West Thirteenth-street, New York.

COAL AND ITS PRODUCTS.—A CHEMIST, with practical experience in the manufacture of the various products from coals, will attend to the erection of works for, and instruction of persons in the detail of the manufacture of all the marketable products from coals, in any part of the country, on reasonable terms. For particulars address H. HALVORSON, North Cambridge, Mass. 1 4*

MACHINISTS' TOOLS FOR SALE.—ONE BOLTcutting machine, with taps and dies up to 1¾ inch diameter; one planing machine, plane 30 feet long and 5 feet 2 inches wide, weight about 24 tuns; one slide lathe, 16 feet long, and will turn 38 inches diameter; one slide lathe 15 feet long, and will turn 20 inches diameter; one slide lathe 12 feet long, and will turn 25 inches diameter; one slide lathe 6 feet long, and will turn 16 inches diameter. The above lathes are all back-geared and screw-cutting, with counter shafts and pulleys complete. One hand lathe 8 feet long, swings 15 inches diameter; back-geared, with counter shafts, &c. One small boring mill; two shop cranes complete. All the above machines are of the first class, and in perfect order. Apply to CHARLES W. COPELAND, No. 122 Broadway. 1 4

CHARLES W. COPELAND, CONSULTING AND Superintending Engineer, No. 122 Broadway, New York, Plans and specifications prepared. Steam vessels and steam engines, both new and second-hand, for sale. Also, wire rope, steam and water gages, indicators, &c., &c. 1 13

BOXWOOD.— A PRIME LOT OF SELECTED Turkey Boxwood (suitable for Wood Engravers, Rule Makers, Plane Makers and others) for sale; the whole or in lots to suit purchasers, by J. & G. H. Walker, No. 183 Center-street, New York. 1*

HOARD & WIGGIN'S STEAM TRAP VALVE, for relieving steam pipes of condensed water, and keeping back the steam:—

PROVIDENCE, R. I.

At the factory of E. M. Chaffee & Co., oil is concentrated by the use of steam at a high temperature and pressure, and for the purpose of regulating the escape of the condensed water from the steam pipes, one of Hoard & Wiggin's improved trap valves is now employed, which insures a steady flow of the water without the slightest escape of steam; and its operation is so perfect, that it leaves nothing to be desired for such a purpose. As to economy, the subscriber believes it to be very great, which, together with its compactness and efficiency, are in his opinion, great recommendations for its adoption and use.

E. M. CHAFFEE.

For the Traps or illustrated circulars, address HOARD & WIGGIN, Providence, R. I. 1*

WOOD ENGRAVING BY A NEW PROCESS.— Photographing (by Price's patent) directly on the block of wood and engraving therefrom insures a true perspective, desirable in all kinds of engravings, but more particularly in mechanical representation. Diagrams of photographs forwarded by mail, can be magnified or reduced by this process with perfect accuracy. Tinted envelopes designed and engraved by skillful artists. We are happy to announce, for the benefit of those wishing original designs, that we have secured the service of Mr. Forbes, who has, perhaps, no superior as a draughtsman, and his celebrity as an artist is too generally known to need comment from us. WATERS & TILTON, No. 90 Fulton-street, New York. 1 3

BUILDERS! CARPENTERS! ARCHITECTS! See the practical illustrations in the "Architect's and Mechanics' Journal." Copy mailed for 5 cents, by A. HARTHILL, No. 128 Fulton-street, New York. 1 2

FOR $75.—I WILL SELL 14 VOLUMES (NO. I. to No. XIV.), unbound, of the SCIENTIFIC AMERICAN, minus ten numbers. A. NICKERSON, Jr., East Boston, Mass. 1 2*

500 AGENTS WANTED—TO ENGAGE IN AN honorable business, which pays from $3 to $5 per day. For particulars address M. M. SANBORN, Brasher Falls, N. Y. 1 2*

APPEALS BEFORE THE JUDGES OF THE U. S. District Court, from the final decisions of the Patent Office, in Rejected Cases, Interferences, &c., are prosecuted by the undersigned on moderate terms.

MUNN & CO., Solicitors of Patents,
No. 37 Park-row (Scientific American Office), New York.

AMERICAN WATER-WHEEL COMPANY — Sole Manufacturers of Warren's Turbine Water-wheels (Warren & Damon's patent), Boston, Mass. This wheel still stands at the head for great economy in water. Over 600 are now operating with great success, the greater part of which are in cotton and woolen factories. With its modern improvements, it cannot be surpassed. A pamphlet published by the company, containing a treatise on Hydraulics, Tables of Power, Prices, &c., will be sent to all applicants (two stamps inclosed). It is the wheel for the North, because ice does not affect it; for the South, because it is simple, and requires but little skill to attach and operate it; for the world, because it generates more available power than any water-wheel in existence. Address A. WARREN, Agent, No. 31 Exchange-street, Boston, Mass. 24 6

FOR SALE.—SCIENTIFIC AMERICAN—VOLS. II., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., bound; price $36. Also in sheets, Vols. III. (27 numbers); IV., V., VI., VII., VIII., XI. and XII. (a few numbers missing from each volume); Vols. IX., X., XIII. and XIV. complete; price $25. Also about 200 odd numbers in Vols. III., IV., V., IV., VII., VIII., IX., X., XI., XII., XIII., XIV. Also, Vol. X., complete in sheets. Also, Vol. VII. complete, bound. Address GEO. PARKER, Newark, N. J. 1*

AGRICULTURE.—WANTED—AN ACTIVE partner to engage in the manufacture of a fertilizer, patented Aug. 9, 1859; superior to guano, producing more grain at one-fifth the cost. Two years of experiments have proved those results. Patent rights for sale by State or county. Address E. B., Fertilizer Patentee, Poolesville, Montgomery county, Md. 1 3*

A MESSIEURS LES INVENTEURS—AVIS IMportant.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.

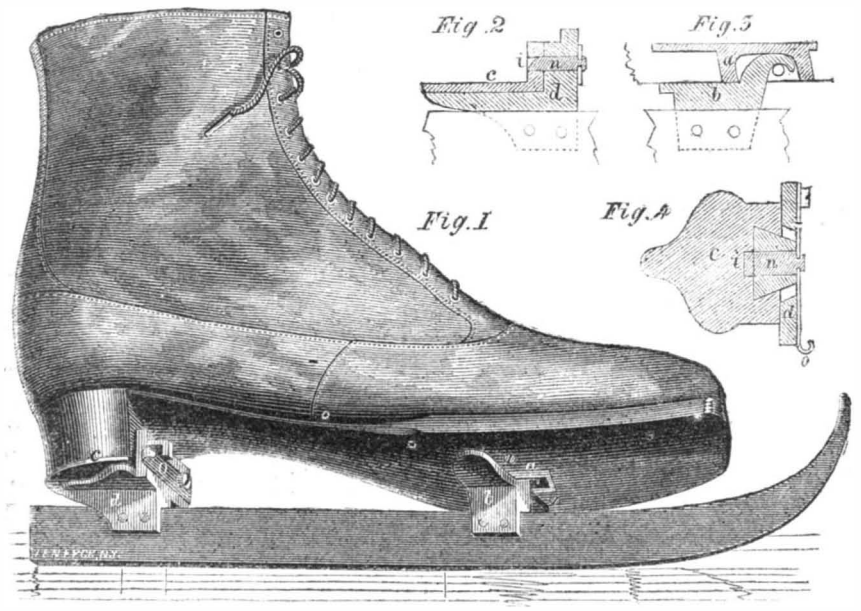
MUNN & CO., Scientific American Office, No. 37 Park-row, New York.

© 1860 SCIENTIFIC AMERICAN, INC.

WHITMAN'S MAGIC SKATE.

Since skating has become so fashionable among ladies and gentlemen, the demand for skates has increased enormously; and this increased demand has naturally turned the attention of inventors to improvements in the article. The annexed cut represents a plan for fastening the skate to the boot or shoe, certainly surpassing in facility anything heretofore devised.

A block of metal, *a*, Fig. 3, is inserted into the sole of the boot at the ball of the foot, and firmly fastened. A hook, *b*, with wings as represented in Fig. 1, is bolted to the upper edge of the skate runner, and this hook may be slipped with a turning motion into the block, *a*, under he pin *e*, thus holding the forward part of the skate



WHITMAN'S IMPROVED MAGIC SKATE.

very firmly to the boot. Upon the heel is fastened the plate of metal shown at *c*, Figs. 1, 2, and 4; Fig. 2 being a vertical and Fig. 4 a horizontal section. This plate, *c*, has a dovetail groove running up the forward edge of the heel, and into this groove fits the projection on the plate, *d*, which is bolted to the back end of the runner. At the inner side of the groove, a slot, *i*, is formed to receive the latch, *n*, which slides back and forth through a slot in the block, *d*, and is pressed inward by a stiff spring, *o*. Thus it will be seen that the skate is fastened to the boot, by turning the hook at the ball into the block, *a*, and simply pressing the block, *d*, against the heel of the boot, so as to slide the dovetail projection into its groove, and to spring the latch into its catch. To remove the skate, the spring, *o*, is pressed forward so as to draw the latch, *n*, from its hold, when the skate is taken off by a single motion of the hand.

A patent for this invention was obtained, through the Scientific American Patent Agency, Dec. 20, 1859, and persons desiring further information in relation to it may address the inventor, T. S. Whitman, No. 72 Beaver-street, this city.

IDIOSINCRASIES OF FOOD.

The assistant-surgeon to the Middlesex Hospital, (Mr. Munn) says: "Instances of the poisonous effects, on certain constitutions, of drugs ordinarily of moderate action are not unfamiliar in medical practice. Ipecacuanha is, perhaps, one of the best examples of a drug that, even in a state of the minutest subdivision, is capable of producing, idiosyncratically, extreme results. But some articles of diet also are, to individuals, poisonous; a numerous class of persons might be easily found, the members of which could not take, without inconvenience, one or other of the various elementary substances. The object of this communication is, however, not to discuss the physiological questions which naturally arise in the consideration of such a subject; it is rather to offer an installment of facts. J. M., an occasional patient, cannot eat rice in any shape without extreme distress. From the description given of his symptoms, I believe spasmodic asthma to be the cause of his discomfort. On one occasion, when at a dinner party, he felt the symptoms of rice-poisoning coming on, and was, as usual, obliged to retire from the table, although he had not partaking of any dish ostensibly containing rice. It appeared on investigation, that some white soup, with which he had commenced his dinner, had been thickened with ground rice. A gentleman who, as in the proceeding case, could not eat rice 'without being suffocated,' took luncheon with a friend in chambers. The fare was simple—bread, cheese and bottled beer. On the usual symptoms of rice-poisoning seizing him, he informed his friend of the peculiarity of constitution. The symptoms were explained by the circumstance of a few grains of rice having been put into each bottle of beer for the purpose of exciting a secondary fermentation. A gentleman, some time since under my treatment for stricture, informed me that he could not eat figs without experiencing a most unpleasant formication of the palate and fauces; and that the fine dust from split peas produced the same sensation, accompanied by a running at the nose. The father of this gentlemen suffers from hay-fever at certain seasons. Mr. P., himself a gentleman of a peculiarly nervous temperament, states that his father cannot endure the sensation produced by handling a russet apple. He also communicated to me the case of Mr. T., who cannot remain in a room in which there is a cooked hare, on account of the peculiar effect produced on his system. Miss ———, after eating eggs, suffers from swelling of the tongue and throat, accompanied by an 'alarming illness.' Miss ———; in this case somewhat similar effects following the taking of honey of any kind, and especially honey-comb, into the stomach, namely, swelling of the tongue, frothing of the mouth, and blueness of the fingers."—*Charleston Medical Journal.*

COAL MINE INUNDATED.—About ten days since, while the miners in Andrews & Hitchcock's, Thorn Hill bank, near Youngstown, Alleghany county, Pa., were engaged in digging coal, they were suddenly startled by a torrent of water, which broke in upon them from one end of the mine, proceeding, as is supposed, from a vast subterranean basin that had been suddenly tapped. So rapidly did the water pour in, that in less than twenty-four hours, an area of eight acres in extent, and five feet in hight, was filled from floor to ceiling, totally suspending the operations of the workmen. Two large pumps, worked by steam, and each capable of discharging sixteen barrels of water per minute, have been actively engaged, night and day, during the past week, in exhausting the water, and, on Tuesday, it had been lowered some 24 inches.—*United States Gazette.*

Several experiments have lately been made near London, with what is called "Silas' Indestructible Signal Lights." These lights, when thrown upon the water, float freely, are not extinguished, and throw out a most intense light which is reflected to a great distance. Even when sunk in the water, they burn for a considerable period, sending out brilliant rays. Such lights must be very useful for vessels at sea.

MECHANICS

INVENTORS, MACHINISTS, MILLWRIGHTS, AND MANUFACTURERS.

The SCIENTIFIC AMERICAN is a paper peculiarly adapted to all persons engaged in these pursuits, while to the Farmer, Housekeeper, and Man-of-Science, it will be found of equal interest and use.

The SCIENTIFIC AMERICAN has been published FOURTEEN YEARS, and has the largest circulation of any journal of its class in the world. It is indispensable to the Inventor and Patentee; each number containing a complete official list of the claims of all the patents issued each week at the United States Patent Office, besides elaborate notices of the most important inventions, many of which are accompanied with engravings executed in the highest degree of perfection.

To the Mechanic and Manufacturer the SCIENTIFIC AMERICAN is important, as every number treats of matters pertaining to their business, and as often as may be deemed necessary a column or two on the metal and lumber markets will be given; thus comprising, in a useful, practical, scientific paper a Price Current which can be relied upon.

The SCIENTIFIC AMERICAN is published weekly in a form suitable for binding, each number containing sixteen pages of letter-press, with numerous illustrations, making a yearly volume of 832 pages of useful matter not contained in any other paper.

Terms.

Two volumes will be issued each year; but there will be NO CHANGE IN THE TERMS OF SUBSCRIPTION, as the two yearly volumes together will be Two Dollars a Year, or One Dollar for Six Months.

Club Rates.

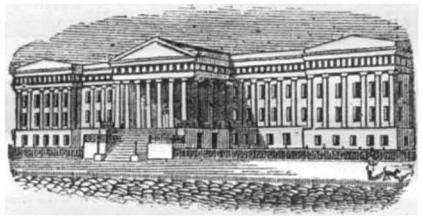
Five Copies, for Six Months.....$4
Ten Copies, for Six Months.....$8
Ten Copies, for Twelve Months.....$15
Fifteen Copies, for Twelve Months.....$22
Twenty Copies, for Twelve Months.....$28

For all clubs of Twenty and over, the yearly subscription is only $1 40. Names can be sent in at different times and from different Post-offices. Specimen copies will be sent gratis to any part of the country.

Southern, Western, and Canadian money or Post-office stamps taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription to pre-pay postage.

When persons order the SCIENTIFIC AMERICAN they should be careful to give the name of the Post-office, County, and State to which they wish the paper sent. And when they change their residence, and wish their paper changed accordingly, they should state the name of the Post-office where they have been receiving it, and that where they wish it sent in future.

IMPORTANT TO INVENTORS.



AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure Patents for Inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other Agency in the world. The long experience we have had in preparing Specifications and Drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between NINE and FOUR o'clock, daily, at their PRINCIPAL OFFICE, No. 37 PARK ROW, NEW YORK. We have also established a BRANCH OFFICE in the CITY OF WASHINGTON, on the CORNER OF F AND SEVENTH-STREETS, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business we have Offices at Nos. 66 Chancery Lane, London; 29 Boulevard St. Martin, Paris, and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European Patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to Inventors. Any one can take out a Patent there.

A pamphlet of information concerning the proper course to be pursued in obtaining Patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the Principal Office or either of the Branches. We also furnish a Circular of information about Foreign Patents.

The annexed letters from the last two Commissioners of Patents we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.:—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers. Yours, very truly,

CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements. Very respectfully,

Your obedient servant, J. HOLT.

Communications and remittances should be addressed to

MUNN & CO.
Publishers, No. 37 Park-row, New York.

© 1860 SCIENTIFIC AMERICAN, INC.